Youth Policy Working Group

Youth4Climate LEARNING HUB

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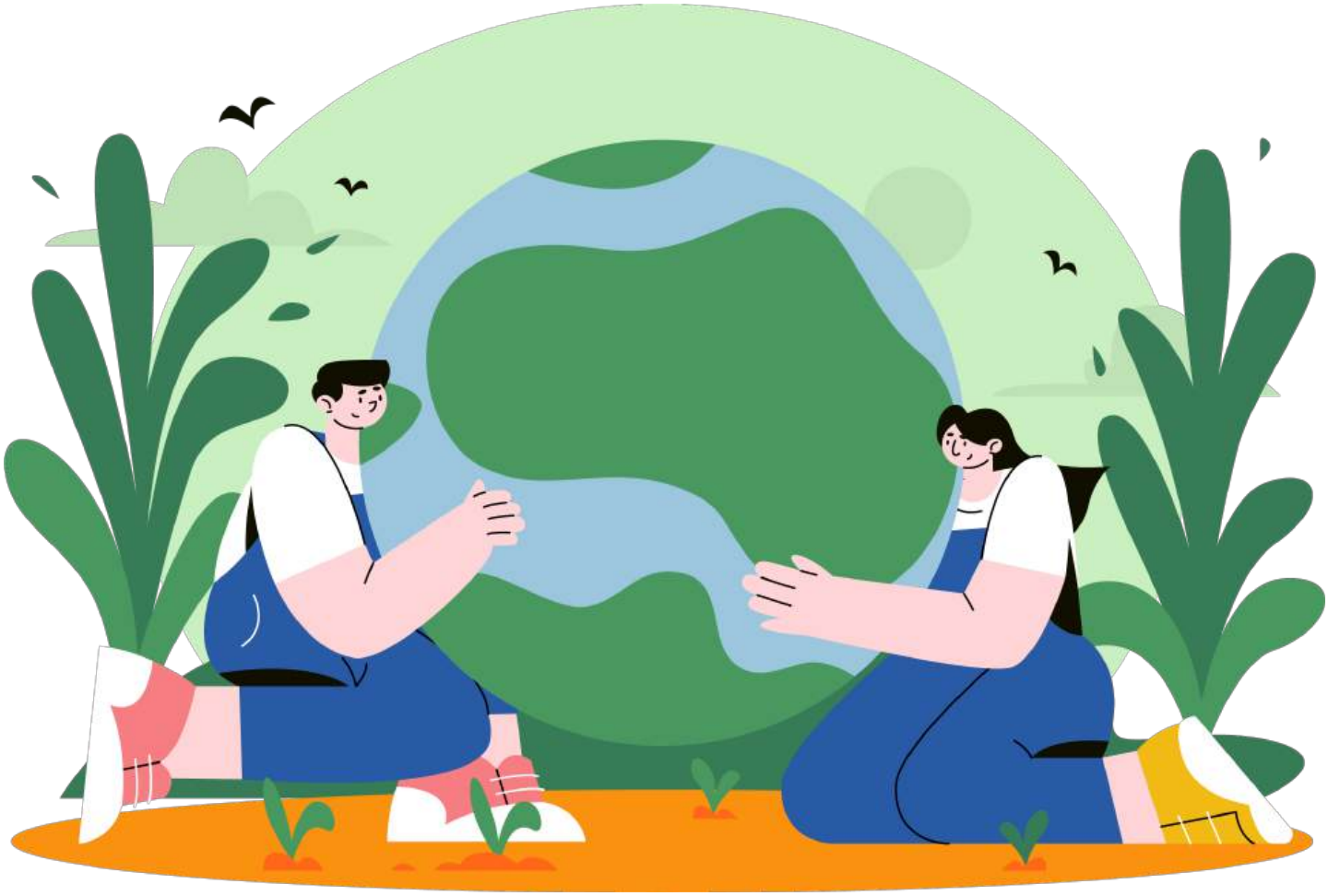
FULL REPORT

YOUTH ENGAGEMENT FOR A SUSTAINABLE FUTURE

STRENGTHENING CLIMATE CHANGE EDUCATION IN VIET NAM



BY: THE YOUTH4CLIMATE POLICY WORKING GROUP – CLIMATE CHANGE EDUCATION TEAM

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TABLE OF CONTENT

FOREWORD

The Paris Agreement on Climate Change, adopted in 2015, demonstrates the commitment of countries to jointly keep the global temperature rise this century to well below 2 degrees Celsius above pre-industrial levels and to strive to limit the temperature increase even further to 1.5 degrees Celsius. However, nearly a decade later, the reality shows that achieving this goal remains far off. Without strong and practical actions, the consequences of climate change, including extreme weather events and disasters, will continue to threaten human lives now and in the future. In many parts of the world, climate change is no longer a distant prospect but a present reality, as exemplified by the century storm Yagi in Viet Nam or Hurricane Boris in Europe.

The United Nations Secretary-General António Guterres has emphasized, ***"Education is the single most important investment any country can make. It is the bedrock of informed, tolerant societies, and a primary driver of sustainable development".*** In the face of the climate crisis, the role of education in empowering our youth is more critical than ever. Climate change education enables the youth - who will face the direct consequences of climate change in the future - to understand climate change impacts, helping them make informed decisions not only for their own lives and careers but also for the future of our planet.

The ***"Youth Engagement for a Sustainable Future: Strengthening Climate Change Education in Viet Nam"*** report, prepared by thirteen authors of the Youth4Climate Policy Working Group (YPWG) Climate Change Education Team with support from the Ministry of Natural Resources and Environment and the United Nations Development Programme in Viet Nam, highlights five key recommendations to strengthen climate change education for key stakeholders. These recommendations include integrating green career skills into high school curriculum, providing greater support for experiential learning, expanding access to knowledge platforms like the Climate Learning Hub, increasing investment in youth-led start-ups, and accelerating partnerships with local and grassroots organizations.

Importantly, these efforts should also target young people living in remote and rural areas to narrow inequalities and ensure no one is left behind. Authors remind us that climate action requires creativity, courage, and boldness: important traits that young people should be equipped with from school. Addressing climate change requires not only strong actions but also informed and strategic approaches. Educating Vietnamese youth about climate change empowers future leaders who will lead the country to sustainable development and achieve net zero emissions by 2050.

We pledge to intensify our efforts in collaborating with Vietnamese youth, translating their requests and ideas into policies and initiatives to ensure that every student, regardless of socio-economic characteristics, has access to high-quality, relevant, and evidence-based climate education. Building multi-stakeholder partnerships and promoting intergenerational dialogue will help build awareness and capacity for effective action among youth and climate activists. We support this call to action and will stand with today's generation of young people to take action to increase climate change education, investing in a generation that acts for resilience, innovation, and sustainability.

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Photo: UNDP Viet Nam

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Disclaimer: *The contents of this report were compiled from policy documents, previous studies and research, and primary data collected by the YPWG from questionnaires and in-depth interviews during the research period from April 2023 to March 2024. This study therefore does not represent the personal viewpoint of YPWG, UNDP, or any other stakeholders. The information provided in this report is only updated up to the time of completion, and some changes might be expected in the future. Neither this report nor any of its parts are permitted for commercial use. We will not be responsible for any information that is falsely provided or changed under any circumstances on behalf of YPWG.*

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LIST OF ACRONYMS

Acronyms	Terms
CCE	Climate Change Education
DARD	Department of Agriculture and Rural development
GE	General Education
HCMC	Ho Chi Minh City
HCYU	Ho Chi Minh Communist Youth Union
MOET	Ministry of Education & Training
MONRE	Ministry of Natural Resources and Environment
NDCs	Nationally Determined Contributions
NGOs	Non-Governmental Organizations
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
YNet	Viet Nam Youth Climate Action Network
YOUNGO	The International Youth Climate Movement
YPWG	Youth Policy Working Group (Youth4Climate Policy Working Group)

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TERMINOLOGY

- Climate change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. (United Nations Framework Convention on Climate Change, 1992).

- Response to climate change: Refers to “human activities to adapt to climate change and mitigate greenhouse gas emissions" (Law on Environmental Protection, 2020).

- Climate change education: A process that “uses innovative educational approaches to help a broad audience (with particular focus on youth), understand, address, mitigate, and adapt to the impacts of climate change, encourage the changes in attitudes and behaviors needed to put our world on a more sustainable development path” (UNESCO, 2010).

- High school: Within the Vietnamese context, “a general education institution that teaches from grade 10 to grade 12, ensuring conditions such as: sufficient personnel (e.g. managers, teachers of subjects, administrative staff, security guards, health workers, etc.); sufficient facilities and equipment for teaching and learning; financially eligible as prescribed by the Ministry of Finance; registered in the national education system established under the State master planning and plans; implementing educational programmes and teaching plans prescribed by the Ministry of Education and Training” (*Circular 19/2017/TT-BGDDT*, 2017).

- High school teacher: An instructor teaching at a high school or teaching at the high school level at a multi-level school (*Circular 19/2017/TT-BGDDT*, 2017).

- Non-public schools: Within the Vietnamese context, “private schools, including both for-profit schools (established and operated by organizations or individuals at grassroots level) and not-for-profit schools (established and operated by social, socio-professional, or economic organizations or individuals, using non-state budget)" (*Circular 19/2017/TT-BGDDT*, 2017).

- Specialized schools: Specialized schools in this study belong to the type of specialized schools as prescribed by the Ministry of Education and Training (*Circular No. 47/2012/TT-BGDDT*, 2012).

- LGBTQIA+: the acronym for lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, aromantic, and agender.

LIST OF FIGURES

EXECUTIVE SUMMARY

This report, "Youth engagement for a sustainable future: Strengthening climate change education in Viet Nam", aims to explore the perspectives and viewpoints of high school students and teachers with regards to teaching and learning about the environment and climate change in their curriculum.

For the purposes of this study, the authors reviewed existing literature, including relevant reports and legal and policy documents, and also conducted 615 surveys and 20 interviews with high school students and 14 consultations with teachers. Their main findings in terms of the advantages and disadvantages of the integrated climate change education (CCE) programme, as well as the needs of students and teachers for CCE, are as follows:

(1) The new general education curriculum (the 2018 General Education programme issued in Circular 32/2018/TT-BGDDT) already ensures basic knowledge of climate change and room for flexibility in terms of teaching contents and methods. However, limitations remain in terms of the applicability, consistency, and duration of integration.

(2) The development of online information sources, along with the improvement of presentation facilities, is helping to deliver positive results in terms of diversifying learning resources and methods. However, discrepancies in terms of infrastructure and equipment among different localities, lack of reliable and official sources of information, and language barriers are outstanding issues that still need to be addressed.

(3) Students strongly prefer learning about climate change through experiential activities such as real-life situations, games, extracurricular activities, and community project implementation.

(4) Rural students have less access to CCE than urban ones, but show potential to take proactive action in addressing local issues. Vulnerable groups—such as students from the LGBTQIA+ community, poor households, migrants, and ethnic minority groups—need more support, especially in terms of teaching methods, facilities, and hands-on activities.

Based on the above findings, as well as existing opportunities and challenges, the authors put forward five key recommendations for different stakeholders to address the current constraints of the CCE programme in Viet Nam from the perspective of youth:

(1) The Ministry of Education and Training (MOET) should integrate information and skills related to green careers into the current curriculum and support schools with improving education quality by providing teachers with training and official climate change teaching materials.

(2) Schools and teachers should improve the applicability of integrated methods for CCE, design extracurricular programmes based on students' needs to encourage proactive engagement, and support youth-led and youth-implemented projects and initiatives.

(3) Students should proactively look for climate change information on the Youth4Climate Climate Learning Hub and other relevant knowledge databases, participate in extracurricular activities, and connect with other young people.

(4) NGOs, Private sectors, and Research Institutes should increase investment and expand opportunities as well as provide financial and technical support to youth' extracurricular activities and startups aiming to tackle climate change-related issues.

(5) For rural and disadvantaged students, MOET, local and international non-governmental organizations, and the private sector should cooperate to provide them with financial support and improved facilities related to CCE in remote areas, organize suitable hands-on climate change activities to encourage the participation of students from people in poverty, the LGBTQIA+ community, and ethnic minority groups, and equip them with green knowledge and skills to respond to climate change.

These recommendations are presented in more detail in Section V of this report. They will also be used to assist relevant stakeholders in coming up with appropriate solutions to improve the integration and effectiveness of CCE in high schools across Viet Nam.

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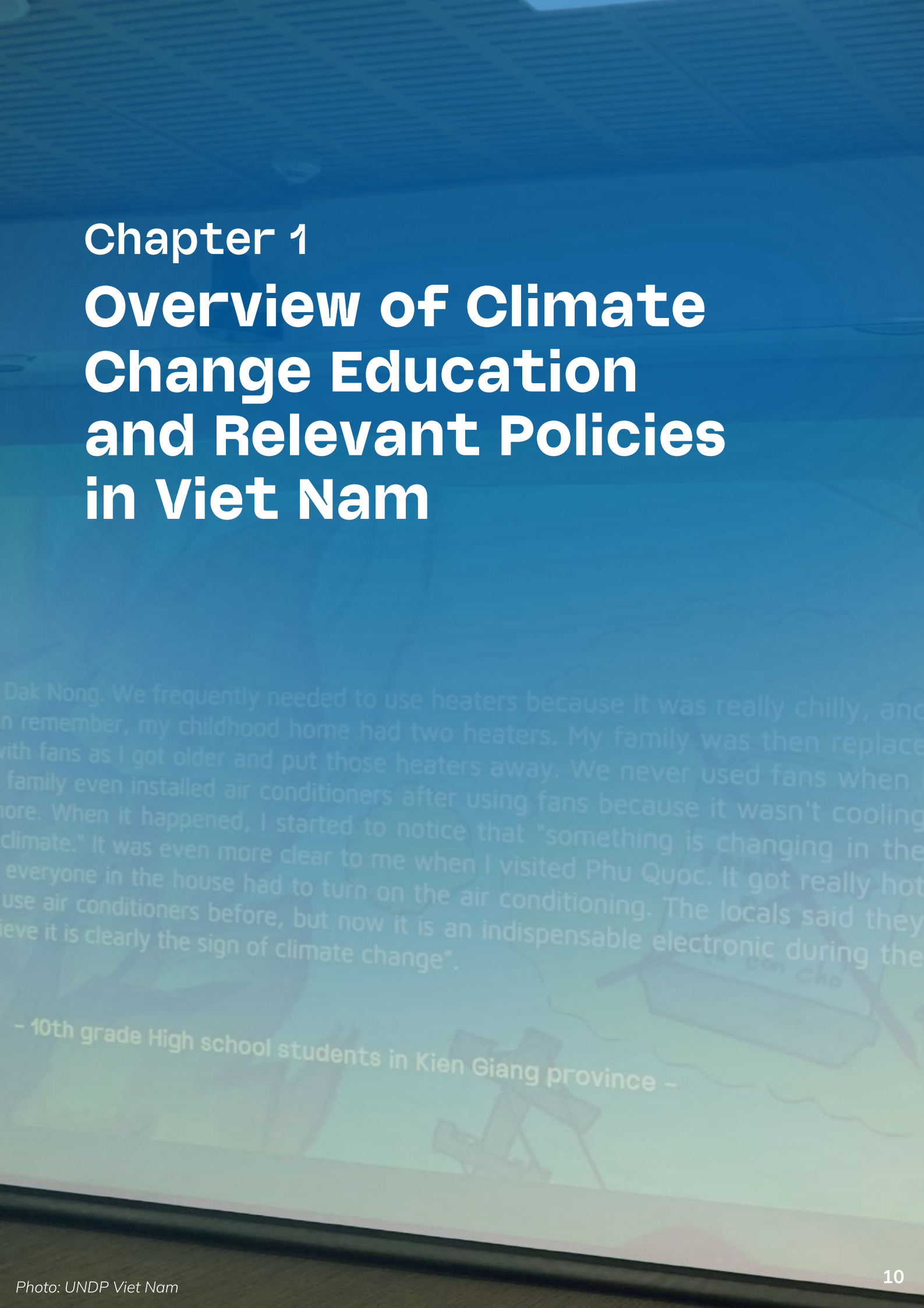
Chapter 1

Overview of Climate Change Education and Relevant Policies in Viet Nam



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1.1 The importance of climate change education in Viet Nam

Viet Nam is one of the countries most severely affected by climate change (World Bank, 2021), with its impacts especially affecting children and youth. Children and youth are more physically and psychologically vulnerable to droughts, floods, and extreme weather events, as they are less able to withstand and survive climate shocks (UNICEF, 2021, p. 9). Such impacts also hinder their ability to access essential services, such as health, nutrition, education, and social protection, which in turn reduces their resilience and adaptive capacity, leaving them trapped in a vicious cycle which further increases their risk of experiencing life-threatening climate effects (UNICEF, 2021, p. 11). The 2020 floods in central Viet Nam, for example, destroyed homes, health and educational infrastructure, and crops, leaving 160,000 children and youth unable to access essential services (UNICEF, 2023, p. 7).

The impacts of climate change on the physical and mental health of children and youth are reflected in the education sector. Direct impacts, such as infrastructure damage due to extreme weather events, prevent children and youth from attending school (Wood, 2023). Indirect impacts, such as increases in temperature, affect their ability to commute to school, especially in remote and rural areas where infrastructure is underdeveloped (MDRI & Oxfam in Viet Nam, 2022, p. 45). For students that try to commute, their travel time takes longer and is more dangerous.

With regards to income groups, there are noticeable disparities. Children and youth from ethnic minorities and low-income households already lag behind their peers in access to education, but coupled with the effects of extreme weather and disasters, this can lead to decreases in family income that force children and youth out of school. Poor rural households whose livelihoods depend on natural resources are vulnerable due to the dual burden of economic circumstances and environmental factors (MDRI & Oxfam in Viet Nam, 2022, p. 48). Climate-induced migration is also seen as an obstacle preventing children and young people from accessing high-quality education (Wood, 2023), given that school transfers can disrupt their learning and threaten their social skills.

Photo: UNDP Viet Nam

Taking into account these impacts, climate change education (CCE) is key to reducing vulnerability and increasing the resilience of children and youth. According to Bapna, Simpson & Colenbrander (2024), there is a strong correlation between access to education and the ability to adapt and understand climate change, as well as gain awareness of climate risks (Bapna, Simpson & Colenbrander, 2024, p. 7). Those with an understanding of climate change are therefore more likely to put in the effort to increase their adaptiveness to climate change impacts (Bapna, Simpson & Colenbrander, 2024, p. 7). Climate initiatives on an international level have provided youth with the opportunity to contribute to climate action. In particular, Article 6 of the United Nations Framework Convention on Climate Change (UNFCCC) emphasizes the role of implementing education and public awareness raising programmes on climate change at the local and national levels (UNFCCC, 1992). Viet Nam has signed and ratified the Paris Agreement, which demonstrates its commitment and responsibility to respond to climate change, including raising awareness and fostering climate action among Vietnamese youth.

1.2 Policies and programs to promote climate change education in Viet Nam

CCE targets have been integrated into Viet Nam's national goals as part of efforts to respond to climate change. Section 5.1.3 of Viet Nam's Nationally Determined Contributions (NDC) mentions the country's goal to "integrate climate change response into the education and training curriculum at all levels of education; improve the quality of climate change response curriculum." (Viet Nam NDC, 2022). This highlights Viet Nam's commitment to tackling climate change through CCE integration, and is further reflected through a wide range of policies and laws:

- In 2014, based on Decision 329/QD-BGDĐT[1], the "Information and Communication on Climate Change Response and Disaster Prevention & Control in Schools for the Period 2013-2020" initiative was approved.

- In 2017, MOET issued Decision 2161/QD-BGDDT approving the "Action Plan on implementing the Sustainable Development Goals in the field of education and training up to 2025 and orientation to 2030". In particular, Objective 2.8 on "Education, awareness raising, and capacity building for climate change response and natural disaster risk mitigation" (adapted from SDG 13.3.1) emphasizes the importance of mainstreaming basic knowledge on climate change response into education and training programmes at all levels.

- In 2020, MOET approved Decision 3162/QD-BGDĐT on "implementing the disaster risk prevention and control plan of the Ministry of Education and Training for the period 2021-2025".[2]

1 Pursuant to Clause 1, Section I, Article 1 of Decision 329/QĐ-BGDĐT on January 25, 2014 on "Information and communication on climate change response and disaster prevention & control for children, students, staff, teachers and lecturers, and officers of the Education sector and parents of students and the community."

2 Pursuant to Clause 5, Section III of Decision 3162/QĐ-BGDĐT on October 22, 2020.

- Most recently, in 2022, the Prime Minister issued Decision 896/QD-TTg on the "National Climate Change Strategy to 2050", which sets out the objectives of integrating and updating climate-related knowledge into all levels of the general education curriculum (Decision 896/QD-TTg, 2022). [3]

In addition to policies implemented by the government and relevant ministries, climate change resources have been developed and disseminated to facilitate the teaching of climate-related knowledge and skills.

- As part of the "Action Plan to Respond to Climate Change in the Education Sector in the Period of 2011 – 2015", in 2012 MOET and Live & Learn published the "Teaching and Learning Toolkit on Disaster Risk Reduction and Climate Change Response". The toolkit includes 3 manuals: the ABC Education Book on Climate Change, the Teaching Manual on Climate Change' and the Disaster Risk Reduction Teacher's Manual.

- In 2016, MOET collaborated with UNESCO to compile the Assessment and Preparedness Toolkit for Safe and Sustainable Schools Prepared for Natural Hazards, Climate Change, Biodiversity Loss, Safety Threats, and Other Risks to support "education authorities at national and local levels, principals as well as teachers and local communities" in preventing and responding to climate change disasters (UNESCO, 2016).

- Additionally, Live & Learn, along with local and international Red Cross societies, has provided training on disaster response-related skills.

- Most recently, in 2022, UNDP and Department of Climate Change (DCC) launched the Climate Change Learning Hub to facilitate the learning needs of youth on climate change.[4] It serves as a centralized platform aimed at providing climate-related knowledge and resources specifically tailored for youth and young entrepreneurs. The Hub offers a variety of modules covering topics such as climate science, ecosystems, energy, materials and waste, and climate policy. This portal is supported by UNDP Viet Nam and involves direct input from youth, along with guidance and advice from leading experts and scientists from UNDP, the Ministry of Natural Resources and Environment (MONRE), and NGOs working in the field of climate change in Viet Nam.

These initiatives lay the foundation for the further development of CCE programmes, activities, and materials.

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3 Pursuant to Point b, Clause 3, Subsection 3, Clause IV, Article 1 of Decision 896/QĐ-TTG on July 26, 2022: "Supplementing, enhancing and updating knowledge on climate change adaptation, disaster risk reduction and greenhouse gas emission reduction into the GE program; fostering a climate-friendly lifestyle, and contributing to the formation of a green lifestyle to protect the earth's climate system."

4 Climate Learning Hub: https://climatelearning.undp.org.vn/

1.3 Overview of climate change education in Vietnamese high schools

Our review of the policy framework in Viet Nam shows that the integration of CCE into the high school curriculum has been considered a priority to improve climate-related knowledge and capacity. Over the years, climate change knowledge has been integrated into subjects such as geography, biology, physics, chemistry, civic education, technology, etc. With the support of national and international organizations, CCE has been integrated into the curriculum, extracurricular activities, environmental education, and life skills-based education.

However, there is still room for improvement. Nguyen Thi Hien's 2019 study on CCE in Japanese, Chinese, and Singaporean high schools highlights the fact that climate change is not a standalone subject in high schools, which explains why it has not received enough resources to develop teaching content or intensive teacher training on the subject matter. Furthermore, the existing high school curriculum is already dense, with limited space left for CCE integration, creating difficulties for teachers in how to effectively and systematically integrate CCE into the curriculum.

Research conducted on integrating CCE into high schools by Nguyen The Hung et al. (2015) also highlighted inadequacies with the current situation of CCE in high schools, as "not only is there no subject dedicated to CCE, but even the guidelines for integration of CCE in these subjects are not available". Although some localities in Viet Nam, particularly those severely affected by disasters driven by climate change, have training programmes for teachers on climate change contents and teaching methods, limitations in funding and facilities hinder its integration into high schools across the country (Nguyen Thi Hien, 2019).

Based on the issues outlined above, it is apparent that there are currently no official teaching and learning materials on climate change at schools in Viet Nam. This significantly hinders the learning experience of students, as well as their ability to comprehend the knowledge and skills needed to learn more about climate change. Therefore, improving the quality of CCE in the high school curriculum is critical to addressing learning barriers that prevent students from accessing CCE.

Starting from the 2022-2023 school year, reforms to the existing general education (GE) curriculum, particularly the high school curriculum, were implemented across the country under the 2018 GE Programme[5] (hereafter referred to as the '2018 Programme'). With these new changes introduced by the 2018 Programme, CCE is more likely to be promoted to equip students with climate change knowledge and skills.

5 In 2018, based on Circular 32/2018/TT-BGDDT, Resolution 88/2014/QH13 of the National Assembly and Resolution No. 29/NQ-TW of the Party Central Committee, MOET officially launched the 2018 GE Program.

Upon examining the 2006 GE Programme (hereafter referred to as the '2006 Programme') and the 2018 Programme, there have been noticeable changes in the perspectives, objectives, teaching methods, textbook usage, and roles of teachers and students (Cổng thông tin Điện tử Chính phủ (Government Web Portal), 2023).

Compared to the 2006 Programme, the 2018 Programme is more focused on developing student competencies and qualities, instead of their ability to solely achieve knowledge and skills. The 2018 Programme also places emphasis on student autonomy in acquiring knowledge and developing their competencies, instead of merely providing knowledge. The role of textbooks has changed as a result. While textbooks are considered the main source of knowledge for teaching in the 2006 Programme, in the 2018 Programme they only serve as "learning materials" to supplement teaching activities in the classroom. The 2018 Programme has three sets of textbooks, which are "Kết nối tri thức với cuộc sống (Connecting Knowledge with Life)", "Chân trời sáng tạo (Creative Horizons)" and "Tiếng Anh (English)". Moreover, in the 2018 Programme, GE is divided into two stages: the basic education phase (from grades 1 to 9) and the career-oriented education phase (from grades 10 to 12). The contents of career-oriented education are integrated into subjects and educational activities, providing students with the option to choose subjects based on their career interests and thus facilitating their expansion of knowledge as well as participation in activities that will enable them to apply theoretical knowledge in practice.

In the 2018 Programme, CCE continues to be considered an important part of the curriculum. At the high school level, in the "Overall Programme" document issued along with the "Circular on the Implementation of the General Education Programme", climate change is mentioned as part of the "competencies required of students", requiring them to "actively participate in and mobilize others to participate in natural resource protection and conservation efforts, climate change response and sustainable development." (MOET, 2018). This also provides an opportunity to strengthen CCE integration and promote its practical application, equipping students with the tools to adapt to climate change.

Because the 2018 Programme is fairly new and has only been implemented since the 2022-2023 school year, there are currently no studies on CCE that take into account the new changes to the GE curriculum, making it difficult to evaluate the effectiveness of CCE or provide solutions to improve its quality. This report aims to partly bridge this gap by investigating students' perspectives on the current CCE programme in order to improve the effectiveness of CCE at the high school level.

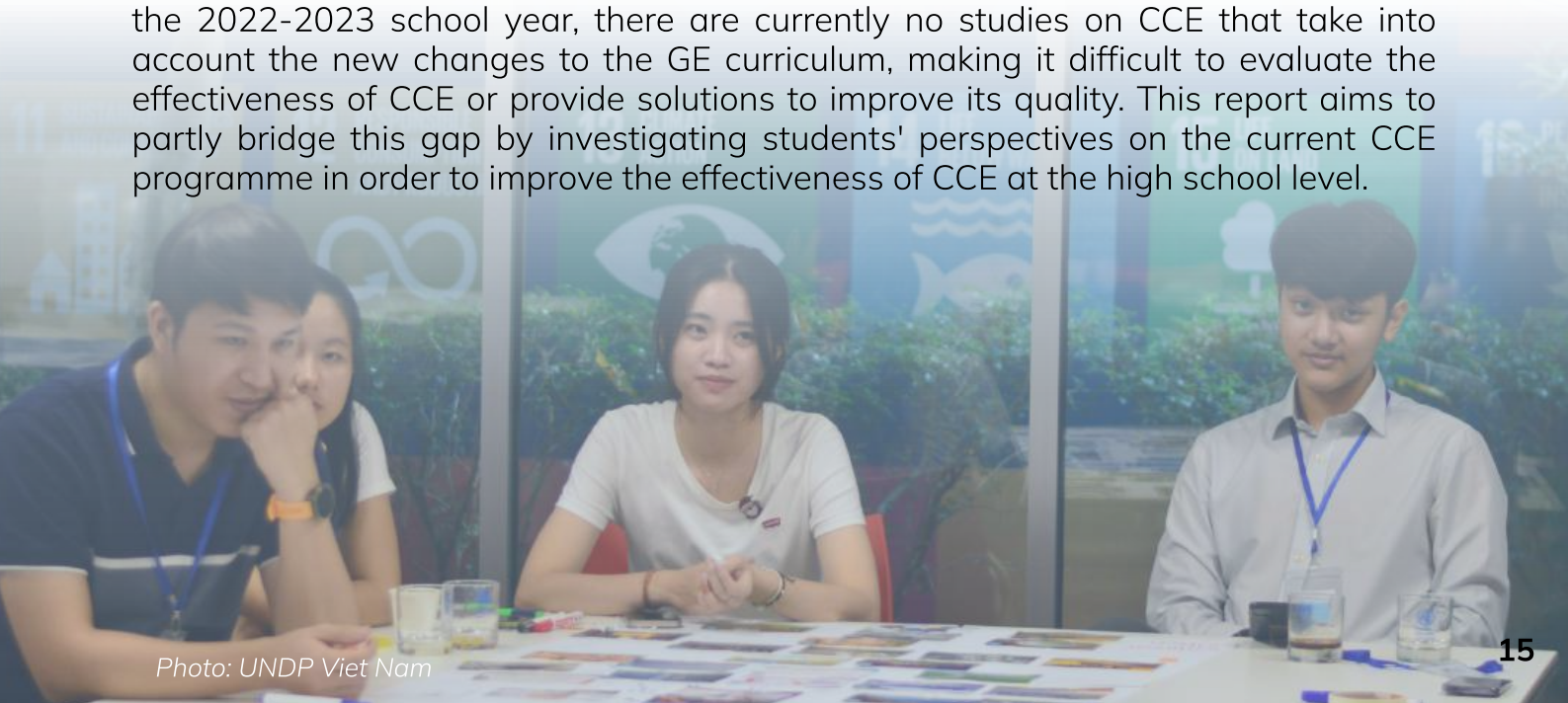
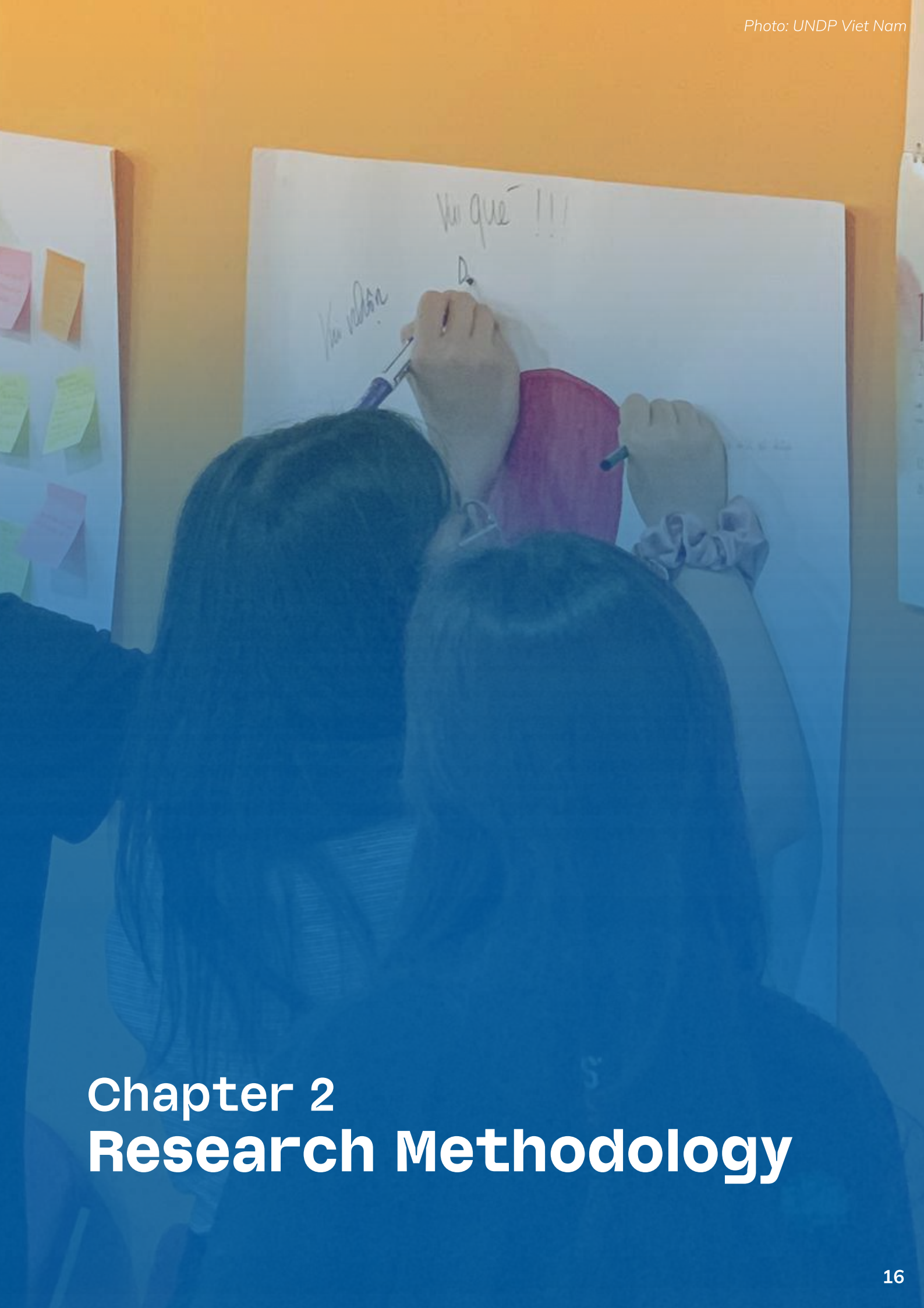


Photo: UNDP Viet Nam



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Chapter 2
Research Methodology

2.1 Purpose and objectives

This study aims to understand the views and needs of high school students on CCE, proposes solutions to improve CCE effectiveness and adapt to students' needs and expectations in the current context of climate change. Teachers' perspectives and viewpoints are also analyzed, consolidated, and compared with those of students.

Research questions:

(1) What are high school students' views on and needs for CCE in Viet Nam?

(2) What are the challenges and opportunities for meeting the needs and expectations of students and young people for CCE at the high school level in Viet Nam?

To answer the above research questions, the authors identified three main objectives:

Objective 1: To understand students' perspectives and views on CCE in high school, thereby identifying their needs for CCE.

Objective 2: To identify challenges and opportunities in the implementation of CCE in the high school curriculum in the near future, based on the perspectives and needs of students and the viewpoints of teachers.

Objective 3: To propose recommendations to enhance the effectiveness of CCE at the high school level in Viet Nam in the context of climate change.

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2.2 Data Collection Methods

a. Literature Review

The authors reviewed and analyzed policies, scientific research and studies, and evaluation reports from national and international organizations and research institutes related to climate change, education, and CCE. For a detailed list of reviewed documents, please refer to the References section. From the results of the literature review, the authors conducted a preliminary assessment of the gaps, inefficiencies, and opportunities for improving CCE implementation for students.

b. Quantitative Methods

For quantitative data, the research team conducted an online survey with high school students. Respondents were high school students aged 15–18 years old attending high schools in Viet Nam (including public and private schools) in the 2022-2023 school year. The survey covered a wide range of students from different geographical regions of Viet Nam as well as representatives of different target groups, especially minority communities. Vulnerable groups were classified according to the vulnerability index of the United Nations, tailored to suit the Vietnamese context. The vulnerable groups included LGBTQIA+, people with disabilities, people living in rural areas, people in poor households, ethnic minorities, displaced people, and refugees. The study also categorized respondents who self-reported as being directly affected by climate change as vulnerable.

- Sample size target: 601.
- The sample size was estimated using the Qualtrics tool[7], with the number of high school students announced by MOET as 2,781,613 students in the 2021-2022 school year[8], with a 95% confidence level and 4% margin of error.
- Sample collection period: from 18/06/2023 to 05/07/2023.
- Outreach channels for data collection using questionnaires:
  - **Online**: Viet Nam Youth4Climate's official page, youth organizations, groups, and other social networks on Facebook.
  - **In person**: Direct surveys conducted at some universities in Hanoi targeting high school students who are fresh graduates from high school in the 2022-2023 academic year and were in their first year of university[9].

(See the detailed questionnaire in *Annex 1*.)

[6] The category of poor households is based on Decree 07/2021/ND-CP stipulating the multidimensional poverty line for the period 2022 - 2025.

[7] Qualtrics. Sample size calculator

[8] MOET (2022). Statistics of LSS and high school education for the school year 2021 - 2022

[9] Due to the delay of the survey, the group of 12th students in the school year 2022-2023 have just graduated from high school and entered their first year of college.

c. Qualitative Methods

In-depth interviews were conducted with students and teachers from high schools across the country to collect detailed information about the experiences and perspectives of these target groups about climate change integration, teaching methods, facilities, and experiential activities. This method was developed to help understand the experiences of the target groups in terms of teaching and learning about climate change in the high school curriculum and extracurricular programmes.

- Sampling method: Snowball sampling was used to identify respondents who had experienced teaching and learning about climate change in high schools in Viet Nam through referrals from members of the Youth4Climate Action Network and selection from the list of participants in the questionnaire survey.
- Sample size: 20 students and 14 teachers.
- Interview period: from 01/10/2023 to 31/01/2024.

(See detailed instructions for in-depth interviews with students and teachers in Annex 2)

2.3 Data Analysis Methods

From the questionnaire results compiled in Google Forms, the research team cleaned and encrypted the data using Google Spreadsheets, and then used Python 3 and Excel Power Query to analyze the quantitative data collected during the research. Results were calculated and presented in terms of quantity, percentage, and comparison between different target groups using different criteria and classifications. A number of statistical tests were then conducted to determine the level of significance and examine the correlations between different target groups.

Photo: UNDP Viet Nam

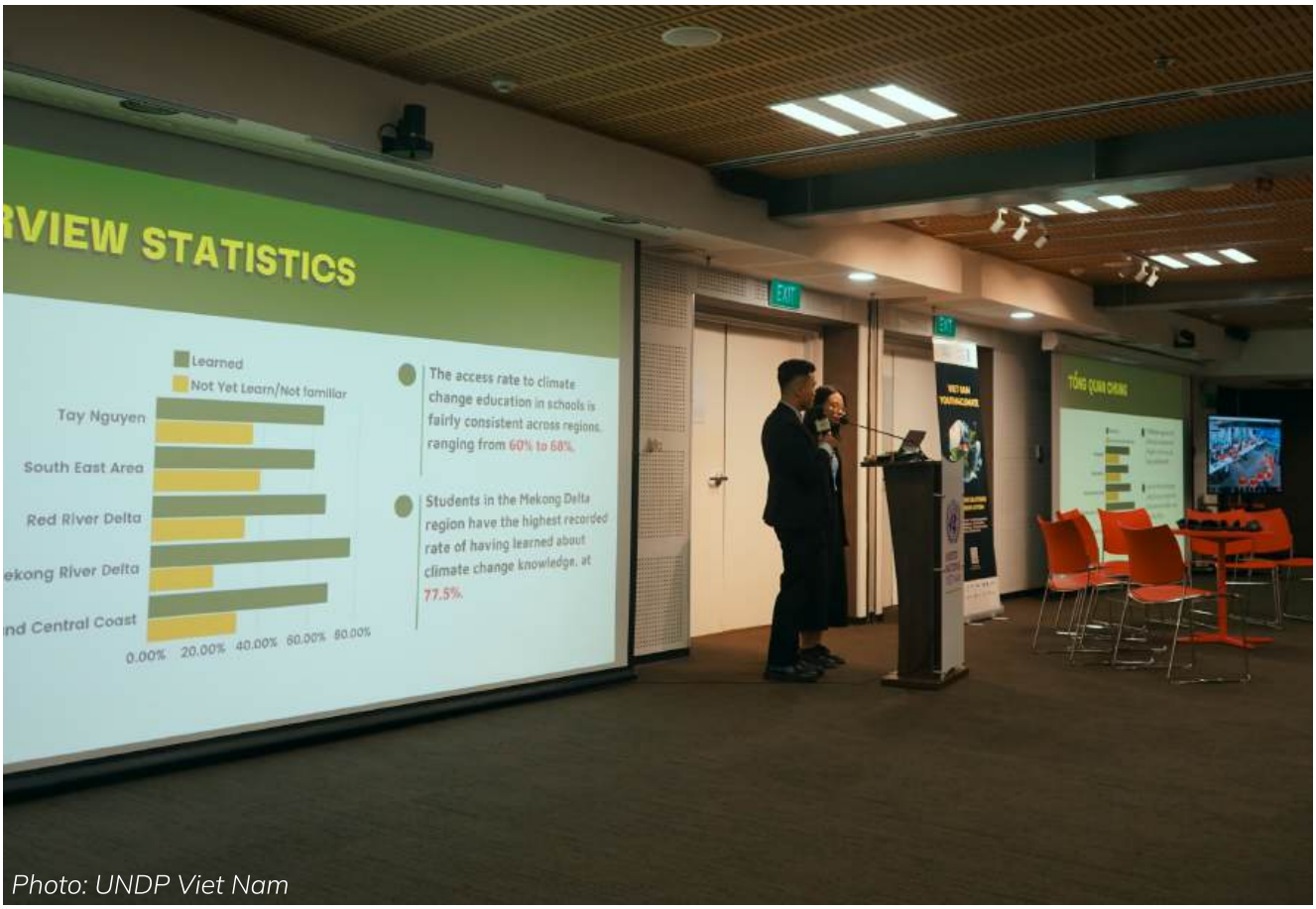
2.4 Research limitations

The study was conducted through surveys with students and teachers and achieved certain initial results in providing an overview of high school students' perspectives and their needs for CCE in schools. However, due to limited time and resources, some issues remain to be addressed for further in-depth research.

First of all, the survey questionnaire was disseminated to respondents through social platforms, reaching 46/63 provinces and cities. However, the student respondents mainly came from three provinces, namely Hanoi, Ho Chi Minh City, and Gia Lai province. Therefore, the study might not fully reflect the views of students in all geographical regions.

Secondly, the research group was unable to reach many disabled students (only three samples were collected), and in-depth interviews with this group were difficult to organize.

Finally, though the findings have presented the views of students and teachers on CCE in high schools, this still needs further verification. The perspectives of school administrators, a stakeholder group playing an important role in shaping CCE integration, for example, must be explored further.



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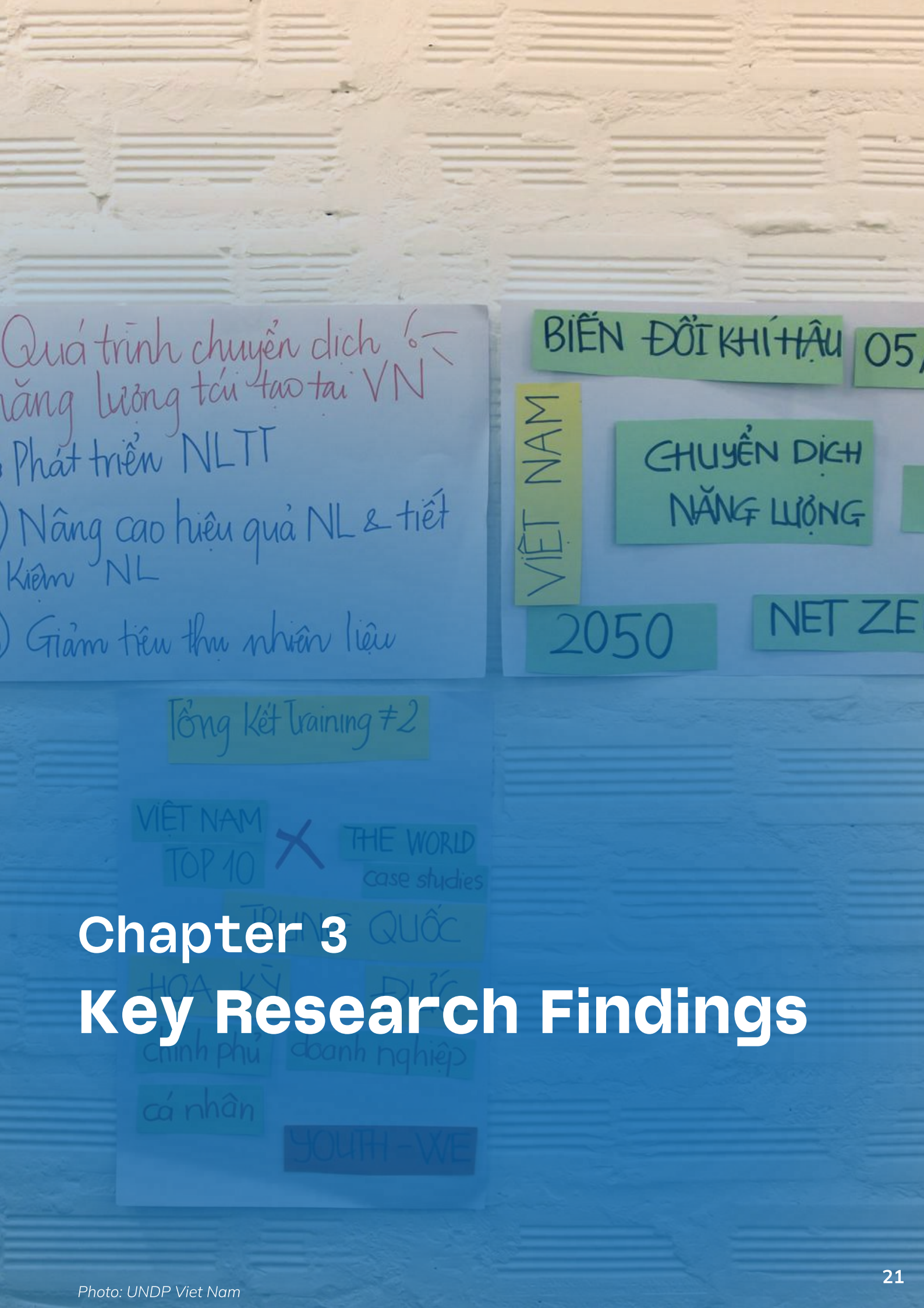

Chapter 3
Key Research Findings

Photo: UNDP Viet Nam

3.1 Global and national youth demands for climate change education

Before looking into high school students' perceptions of the current status of CCE in Viet Nam, the study reviewed the needs of young people for CCE in Viet Nam and around the world to collate with the actual situation at the time of conducting this study. According to the 2022 UNESCO report "Youth Demands for Quality Climate Change Education", some of the fundamental needs to increase the quality of CCE include:

1. Action-oriented education for climate change and increased awareness of humans in nature.

2. Considering climate change as an interdisciplinary issue, cross-cutting subjects to address the complexity and interlinkages related to it.

3. Promoting learner-centered, experiential and reflective approaches in learning climate change to make it more entertaining, solutions-based and practical.

4. Increasing support for teachers to have capacity and resources for teaching climate change.

5. Building schools as the centered learning environment for climate change.

6. Strengthening youth voices in decision-making process on climate action.

7. Local contextualized climate change education through engagement with the local community.

8. Lifting barriers on the differences of individual geographic and demographic conditions to create equity in accessing climate change education.

Photo: UNDP Viet Nam

Photo: UNDP Viet Nam

In Viet Nam, there have also been many reports and studies on the needs of young people for capacity building and education related to climate change. Accordingly, the "Special Report on Youth for Climate Action in Viet Nam 2021" (UNDP, 2021) mentioned four bottlenecks that need to be addressed to foster effective youth climate action:

1. **Skill limitations**: Including skills to apply theory into practice, design thinking, and project management skills. These are skills that are considered lacking and not yet popular in the school environment;

2. **Lack of support from stakeholders**: Including the ability to build trust in working with local governments, scientists, and school administrators to help developing and implementing climate initiatives;

3. **Technological limitations**: Including access to advanced technology and techniques to increase the effectiveness of climate initiatives;

4. **Financial constraints**: Including lack of skills in financial planning, evaluation, and finding suitable funding sources, and obstacles in seeking legal status in receiving funding.

Photo: UNDP Viet Nam

The report also highlights that youth from remote areas, ethnic minority groups, people with disabilities, and high school students face particular difficulties in accessing opportunities to upgrade their skill sets. A year later, the "Special Report on Youth for Climate Action in Viet Nam 2022" (UNDP, 2022) highlighted three key demands in climate change education, including:

1. Integrating content related to climate change into the general education system, focusing on localized content using Vietnamese and ethnic languages at all educational levels until 2030;
2. Localities and relevant parties organize additional awareness raising activities on climate change for citizens, promoting "green" lifestyle and climate action;
3. Improving facilities, access to technology and documents for research and innovation, to create conditions for young people to build climate solutions, especially students in remote areas or from disadvantaged groups who do not have many opportunities to interact with emission reduction technology in the general education environment.

Based on the above-mentioned needs of young people in Viet Nam and around the world related to capacity building and access to climate change education, this study focuses on analyzing the current situation of CCE at the high school level through the perspectives and observances of students in the following aspects:

1. Curriculum contents;
2. Teaching methods;
3. Channels to access climate change information and knowledge;
4. Facilities and infrastructure;
5. Extracurricular activities; and
6. Advantages and challenges of vulnerable groups.

3.2 Students' perceptions of the current status of climate change education at the high school level

3.2.1 Overview of samples

Overall, 615 samples were collected in the quantitative survey via student questionnaires. The questionnaires were collected from students representing **46 out of 63 provinces** across the country.

Regarding gender distribution, two thirds (66%) of respondents were female, one third (32%) were male, and the rest (<2%) identified as other. The majority came from non-gifted[10] public schools (76.3%), followed by gifted schools (17.4%), and a small number from private high schools (6.3%). Student respondents were also spread across three class groups, with students in grades 10, 11, and 12 accounting for 37.6%, 23.1%, and 39.3% respectively. In terms of the representation of vulnerable groups, one third of respondents came from rural areas, with other groups such as the LGBTQIA+ community (8.9%), migrants, internally displaced people, or refugees (3.3%), ethnic minorities (3.1%), students from low-income households (2.6%), and people with disabilities (0.5%) also being represented to a small degree.

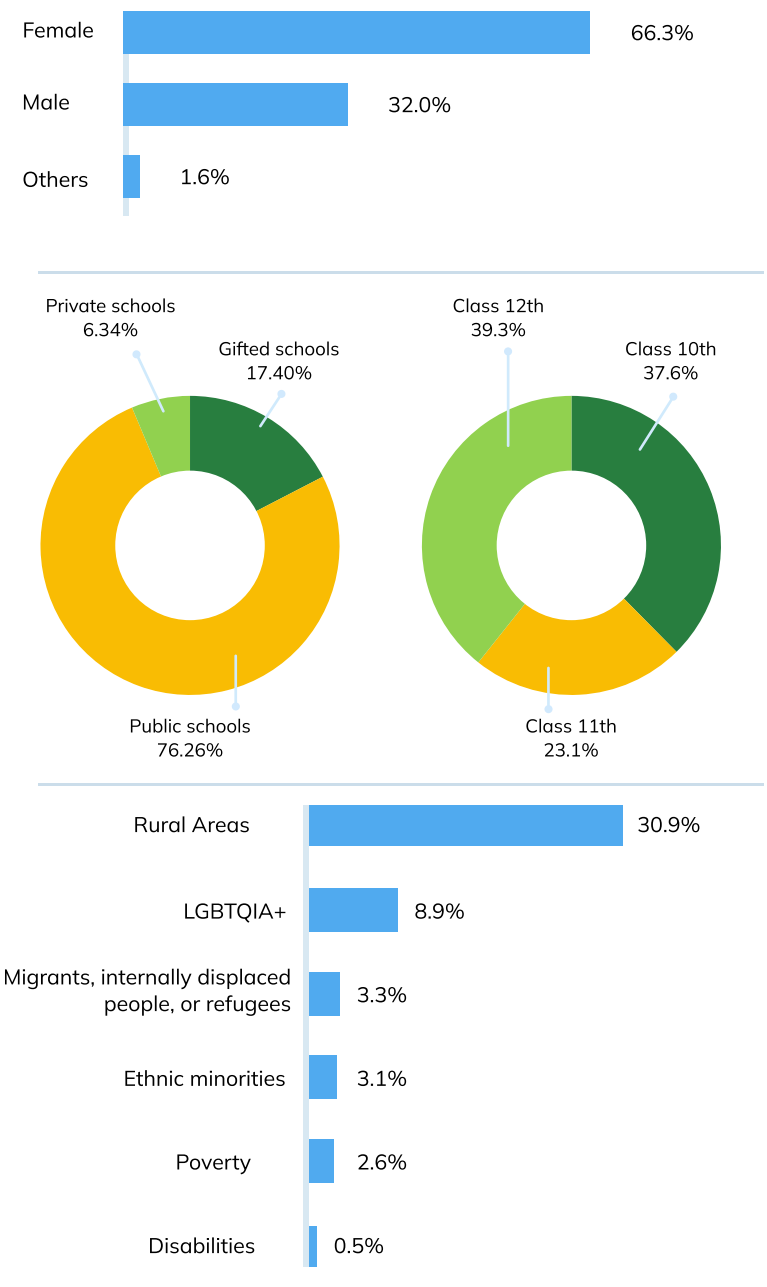

Figure 1: Grouping respondents by gender, school type, class group, and vulnerable group

[10] In Viet Nam's high school system, Gifted schools are public institutions designed for high school students to demonstrate their giftedness in the natural sciences, social sciences, and foreign languages. On the other hand, non-gifted schools are other public schools which are not gifted schools.

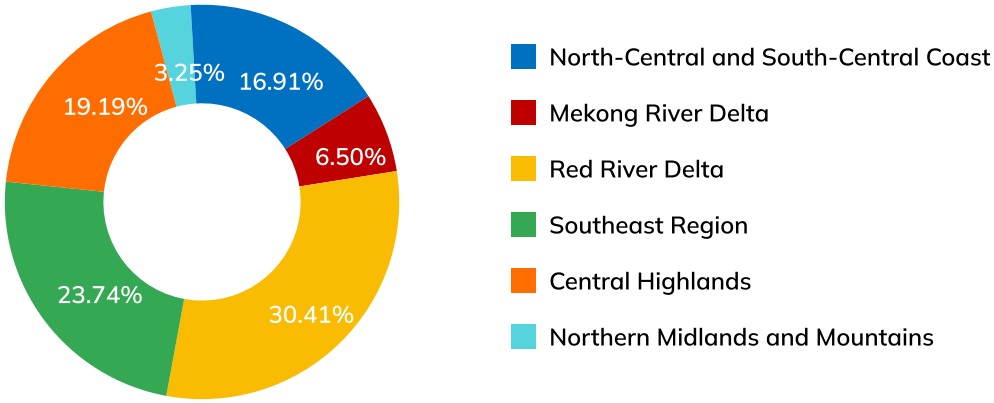

Figure 2: Geographical distribution of respondents

Regarding the provinces where respondents were living, as well as the geographical divisions according to Resolution 26/2022/UBTVQH15, the study found that the majority came from the Red River Delta (30.4%) and Southeast region (23.7%), mainly from Hanoi and Ho Chi Minh City. Notably, a large number of students participating in the survey were also from the Central Highlands (19.2%) as well as the North Central and South Central Coast (16.9%). The number of samples from the Northern Midlands and Mountainous Area was too small (3.25%) to be available for analysis.

When students were asked if they felt their living area had been affected by climate change in the past five years, the percentage of students who perceived being affected was quite similar, at over 75% in all regions including the Red River Delta, Mekong Delta, Southeast Region, North-Central and South-Central Coast, and Central Highlands.

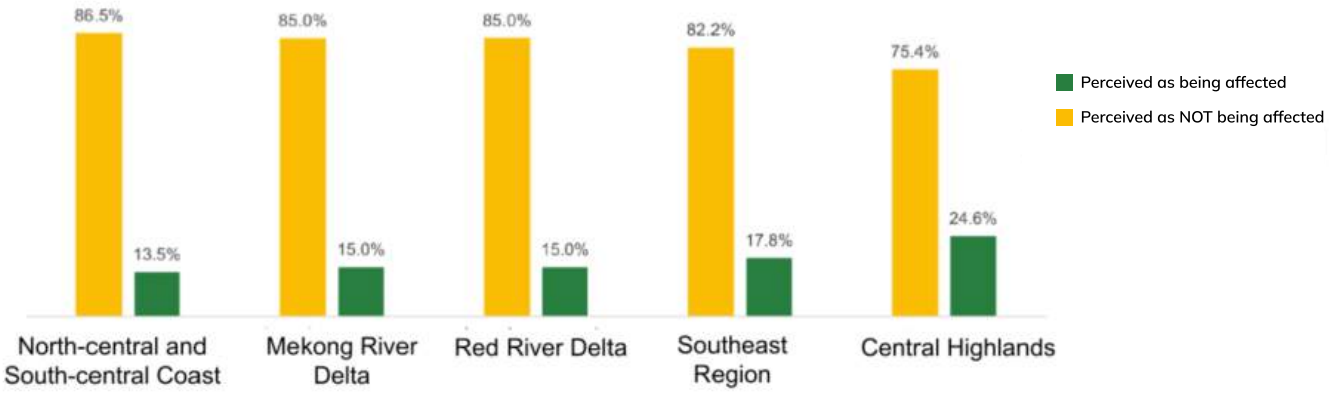

Figure 3: Percentage of student respondents who perceived themselves as being affected by climate change, separated by region

The survey shows that 65.7% of high school students have learned about climate change at school. Most of the regions have more or less the same access to CCE, ranging from 60% to 68%. Notably, students in provinces and cities in the Mekong Delta region had the highest percentage of students equipped with climate change knowledge, at 77.5%. The Mekong Delta has recently been forecast as one of the most climate-affected areas in the world, with nearly half of its area likely to be submerged below sea level by 2050 (MONRE, 2021; DCC, 2022). Therefore, the survey data reflects students' awareness of climate change learning, as well as the interest and investment in CCE in the Mekong Delta to build resilience for people living in this region, including students, to cope with climate risks.

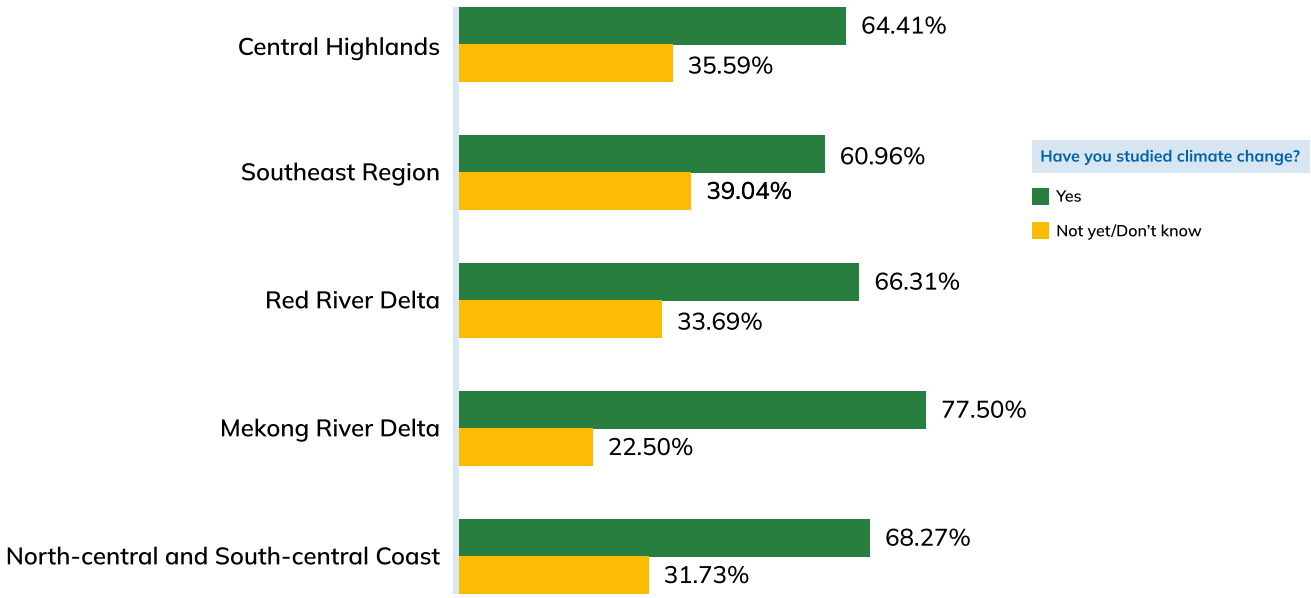

Figure 4: Percentage of students equipped with environmental/climate change knowledge at the high school level by region

Of the twenty students who participated in the in-depth interviews, 60% were men and 40% women. Of these, 40% of students were from gifted schools and 60% were from public schools, with 35% of students in grade 10, 40% of students in grade 11, and 25% of students in grade 12 during the 2022-2023 school year.

Of the fourteen teachers from six provinces and cities who participated in the in-depth interviews, eight teach compulsory subjects (Mathematics, Vietnamese, English, and History) and six teach elective subjects (Geography, Chemistry, and Economic and Law Education).

3.2.2 The contents of climate change education in the high school curriculum

Climate Change Knowledge taught at high schools

For the students who learned about climate change, the study focused on exploring the contents of the knowledge they were exposed to at high school more deeply. Results showed that students are aware that climate change knowledge has been taught and popularized through mainstreaming in a variety of high school subjects. Subjects that a high percentage of students noted as having CCE contents included geography (72.8%), experiential activities and career orientation (55.7%), local education (40.6%), biology (40.3%), and foreign language (31.4%).

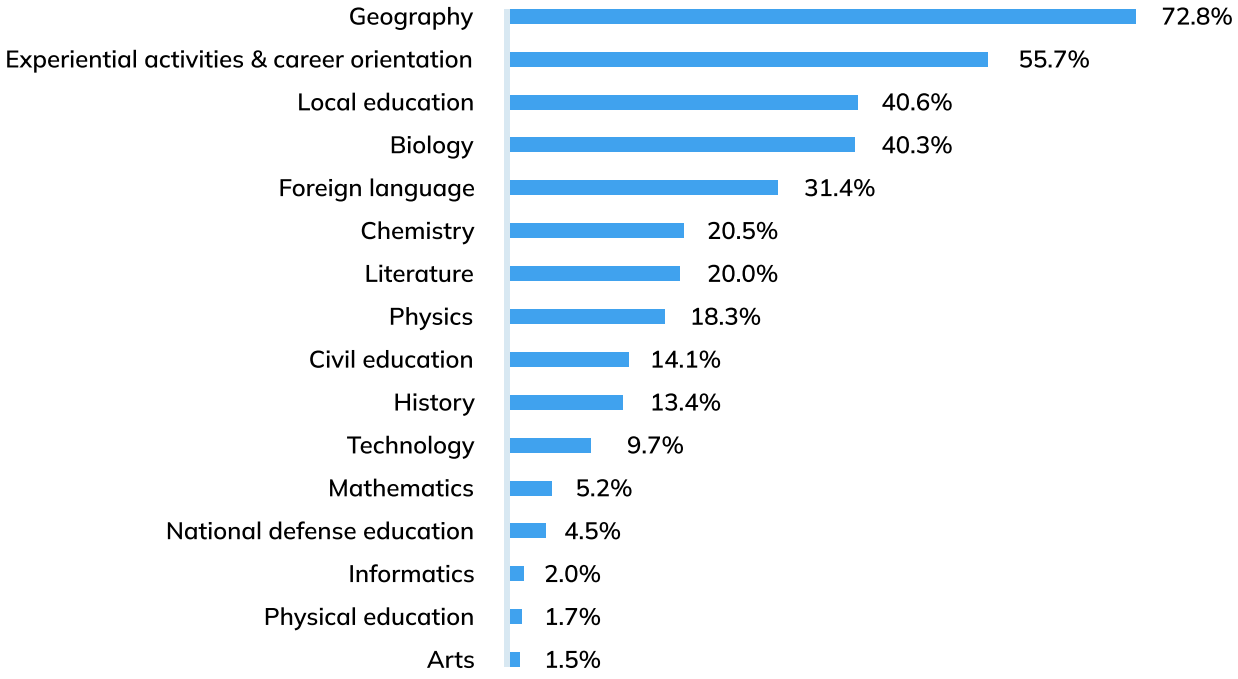

Figure 5: Percentage of student respondents equipped with integrated CC knowledge at the high school level, by subject

Photo: www.freepik.com

Through qualitative data, the research also synthesized the knowledge students remembered about CCE contents in the 2006 and 2018 General Education programmes at the time of the interview. The two educational programmes, including the old one issued in 2006 and the one issued in 2018[11] (starting nationwide implementation at the high school level beginning in the 2022-2023 school year), are as follows:

General Education Program issued in 2006	General Education Program issued in 2018 (implemented in high school s from 2022 - 2023 school year)
Use a nationwide set of textbooks	Three versions of textbooks can be used, subject to the decision of teachers and schools: "Connecting Knowledge with Life", "Kites", and "Creative Horizons"
Subjects integrated with climate change knowledge: • Geography (with a dedicated chapter on climate change) • Biology • Civic Education • English • History	Subjects with integrated climate change knowledge include: • Geography (with a dedicated chapter on climate change): "Connecting Knowledge with Life)" version • English (with a dedicated chapter on climate change): the "Global Success" and "Connecting Knowledge with Life" versions • History: "Connecting Knowledge with Life" and "Kites" versions • Biology: "Connecting Knowledge with Life" version • National security and defense education: "Connecting Knowledge with Life" version • Experiential activities and career orientation: "Connecting Knowledge with Life" version • Economic & law education • Local education
Integrated contents focus on basic scientific concepts, weather phenomena, and messages to raise students' awareness of climate change. Civic education also deals with natural resources and environmental protection policies.	Integrated contents address the drivers and impacts of climate change on students, their families, communities, and ecosystems. National security and defense education also mentions some violations of laws and regulations on environmental protection.

[11] A Climate Change According to Resolution 88/2014/QH13 on "Renovation of high school Programs and textbooks"; Resolution No. 51/2017/QH14 on "Adjustment of the implementation roadmap of new high school Programs and textbooks according to Resolution No. 88/2014/QH13 dated November 28, 11 of the National Assembly on programme renewal, GE textbooks and textbooks"

At the time of the study, only grade 10 students across the country had started studying the 2018 new general education programme from the 2022-2023 school year, while all the students who had completed grades 11 and 12 were using the previous set of textbooks and had no experience with the contents of the new textbooks to provide a more comprehensive comparison of the learning contents of both programmes. Based on the existing data, in both the old and new programmes the integration of climate change knowledge is still largely dependent on the development of lesson plans by teachers, especially for subjects that do not have separate climate change chapters. Students also said that the new general education programme is illustrated with more vivid visual examples and short videos than the old one. However, the new programme has uneven integration, depending on which version of the textbook the school chooses to use.

The majority of students interviewed also confirmed that their teachers provided general information about environmental pollution and climate change, then emphasized awareness and behavioral change messages. However, these students believed that the integrated climate change contents were still limited, unattractive, and not encouraged enough for most students.

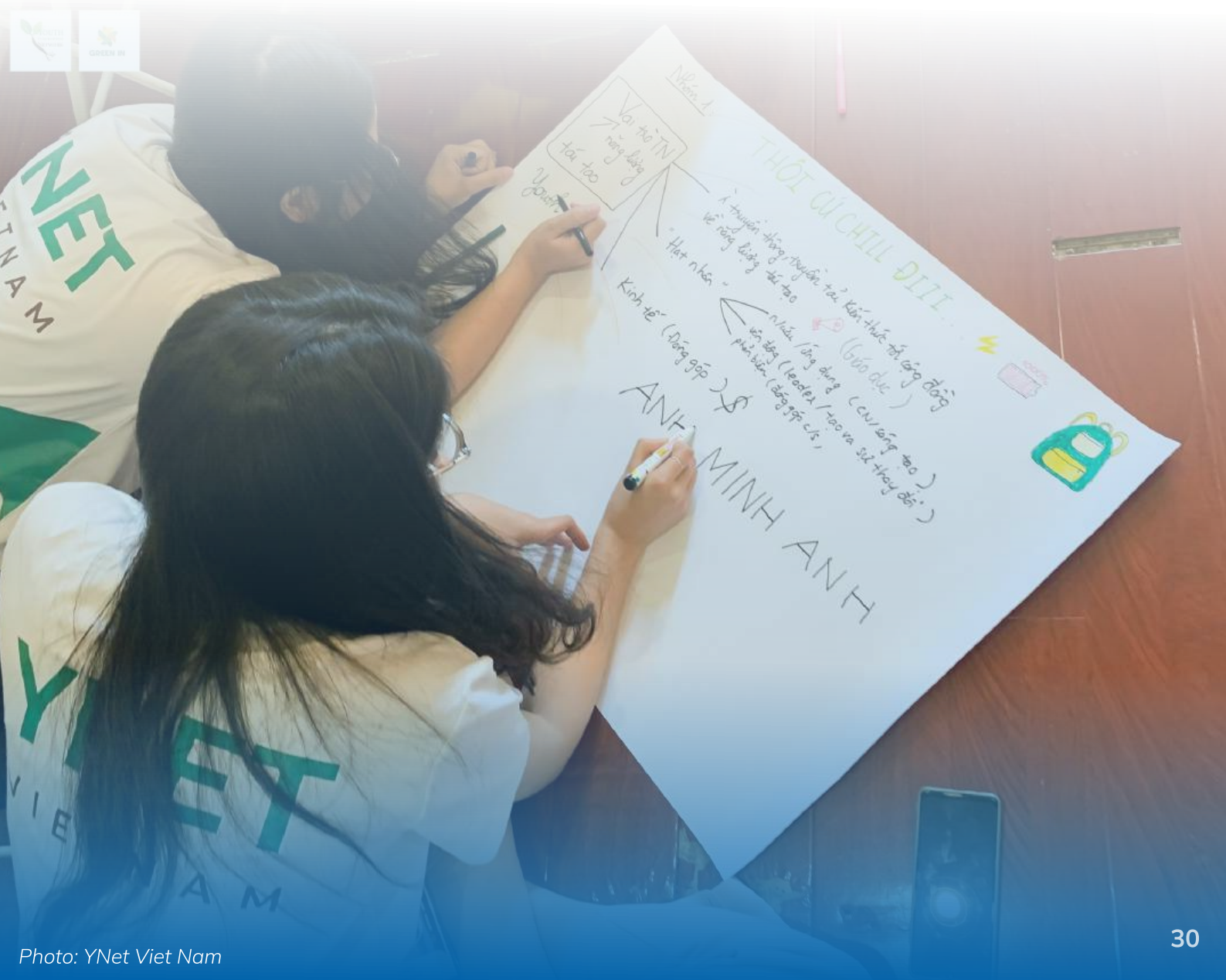

Photo: YNet Viet Nam

When compared with results from teacher interviews, the information about climate change integration in the old programme was relatively consistent with students' opinions. The teachers also mentioned that, depending on the nature of each subject, climate change issues were introduced either in a separate textbook chapter or integrated into various examples and exercises. As for the new high school programme, the teachers reported that the number of subjects with separate climate change chapters has increased, which aligned with student comments. Some teachers also believed that the new curriculum encouraged the enhancement of real-life examples, and so some teachers had started to integrate climate change knowledge into assignments in some compulsory subjects that had rarely been reported to integrate climate change content previously, such as mathematics and literature. The integrated contents shared by the teachers were similar to those shared by the students, including topics on sustainable development, environmental protection, biodiversity conservation, and the condition and impacts of climate change. Having the right to select one out of three sets of textbooks in the new programme also allowed the teachers to actively prepare lesson plans according to the goals and orientations of each school and region.

Another noteworthy point in the new programme is the emergence of two new subjects with great potential for integrating climate change issues, namely **(i) Experiential activities and career orientation** and **(ii) Local education**. Based on in-depth interview data, the current contents of career orientation have not yet been recorded as mentioning topics related to green jobs and careers, contributing to emissions reductions, or tackling climate issues. This creates a gap that should be explored to help students see climate change as an opportunity for future personal and professional development. As for local education, at the moment provinces and cities are still in the process of developing materials and completing the curriculum for this new subject, so this study does not have sufficient data to draw conclusions. However, this would seem to be an opportunity for schools to further integrate climate change issues in accordance with the actual situation of each locality.

Photo: UNDP Viet Nam

Applicability of knowledge related to climate change and the need to improve the curriculum

After asking questions about the climate change issues that students had learned about, the study explored whether the students saw the knowledge as relevant to their daily life and future goals.

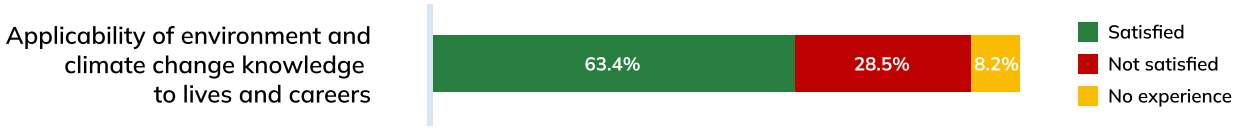

Figure 6: Students' satisfaction level regarding the applicability of environmental and climate change knowledge to their future lives and careers.

The students were relatively positive, with 63.4% of the opinion that they could apply the knowledge they had learned. However, nearly one third were not satisfied, and 8.2% had never experienced applying the climate change knowledge they learned in practice. It can be seen that there is still room for improvement.
Three priorities related to the design of the curriculum that students would like to see improved include:

- **Textbooks** (35.8%);
- **Subjects related to climate change** (32.5%); and
- **Local contextualized elements embedded in the curriculum** (31.7%).

This demonstrates that, along with increasing the climate change contents in textbooks and the number of subjects with integrated climate change contents, students also expected more local and contextualized issues to be included so that they might better understand how climate change affects their specific areas and what actions they should take to address such issues.

3.2.3 High school climate change learning and teaching methods

Current climate change teaching methods: advantages & disadvantages

To ensure the effective implementation of the curriculum, appropriate learning and teaching methods are essential. According to the survey, **71.8% of students were satisfied** with the climate change teaching methods being used at their schools. This positive result shows that current teaching methods partly met the needs and expectations of students.

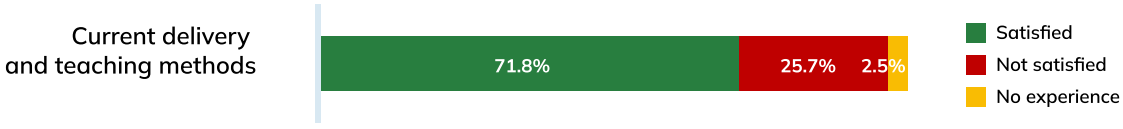

Figure 7: Students' satisfaction level with climate change delivery and teaching methods

From the in-depth interviews, according to most students **the traditional teaching methods often used by teachers include lectures, Q&A sessions, and group discussions**. However, the application of **visual aids** for teaching, such as images and videos, is becoming more widespread, and some teachers have been pioneering the application of more diverse teaching methods such as **student presentations, games, field trips, movies, poster designing, painting, model building, participating in hands-on experience activities or practicing green actions in the locality**. Students believed that new forms of experiential learning made them more motivated and interested in the lessons, and better able to understand the problems to be solved.

"The teacher combined both modern and classical teaching methods, with a certain interaction between teachers and students. She also used Miro for visual presentations with images or videos. She supplemented directly from sources on social media without prior preparation. In addition, before class or at the beginning of class, there were also games to consolidate knowledge. I find it quite interesting because playing also has credits. For example, in a game with a motif like "Who is the millionaire", players will answer a series of questions from low to high on a scale. Besides, there is another type of game called "Party Number", where we have a series of questions, of which we need to "pick" an answer. If it's right, the student gets to pick again. If it's wrong, the points will be transferred to the next person. Only a few subjects such as History, Geography, and Civic Education have many of the above methods applied. While the natural science subjects are less."

A grade 11 student from a public high school in Nghe An province

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The above comment shows that the teacher's delivery and teaching method had great impact on her students' reactions, which increased their interest in the subject. Official documents on climate change teaching guidelines for teachers evaluated by the Ministry of Education and Training currently include the set of documents "Teaching and Learning Manual on Disaster Risk Reduction and Climate Change Response" developed by the Live & Learn Environmental Education Center in Viet Nam and the Australian Agency for International Development (AusAID). **However, most of the teachers interviewed (13/14) reported that they had not received any official guidelines on climate change teaching and only followed the curriculum in the textbook. In fact, with the student-centered approach for human resource development, the interviewed teachers were aware of their new role in education, which is more like a facilitator and mentor who supports and encourages students to learn more actively. They also acknowledged the gap between compiling a textbook and implementing teaching in reality. They tried to be more flexible and adapt the teaching and school activities based on the interests of their students.**

Photo: LCOY Viet Nam

Some teachers also mentioned that senior teachers face more difficulties in their ability to organize activities using new methods of integrated teaching in the new 2018 general education programme. This could be potentially rooted in senior teachers who are familiar with traditional teaching methods and have used old textbooks for many years, and who will thus take longer to adapt to new teaching methods increasing student's experience and creativity that build on the new textbook's foundations.

In order to prepare for the implementation of the new sets of textbooks, teachers were also equipped with guidelines and training on the delivery of their subjects. Every year, the Ministry of Education and Training and local departments organize direct and online training sessions for teachers on the school textbooks. However, training on climate change integration was only provided in some localities. Among the teachers who participated in the interviews, one geography teacher shared that she participated in a training workshop for teachers on climate change issues organized by the provincial Department of Education and Training. She also received teaching materials for climate change integration, and afterwards the participating teachers also delivered a demo class on climate change using the materials and exchanged feedback and advice for improvements of the contents.

"[...] A demo class on climate change issues was delivered by a high school teacher. Other teachers attended. After one lesson, the participating teacher and the delivering teacher will evaluate whether the program is suitable for the reality of climate change or not."

A geography teacher from a public high school in Tay Ninh province

In some other schools that did not have training on how to teach and integrate climate change content, teachers shared that they had received official dispatches focusing on climate change issues in extracurricular activities and experiential activities. **However, one of the major constraints for CCE integration is that CCE is not compulsory.** While students mainly focus on compulsory subjects for the purpose of high school graduation and college entrance exams, teachers are also under pressure to integrate a variety of economic, cultural, social, and environmental knowledge while still ensuring that the main content of the textbook is covered. This results in inadequate time for CCE, an issue mentioned by many students and teachers, and in turn a lack of synergies and reduced effectiveness for CCE integration in schools across the country. The ability, level, method, frequency, and duration of integration highly depends on the content the textbooks that must to be delivered, the demands of students, the capacity and willingness of teachers, and the direction of the schools.

"...the teachers themselves might find ways to integrate climate change issues... The class duration is generally limited, focusing on teaching. Therefore, there is not enough room to accommodate CCE. The teachers also do not have enough climate change knowledge and information to teach students. I didn't find anything interesting to discuss climate change with students."

A math teacher from a public school in Tay Ninh province

The effectiveness of teaching methods on student behavioral change and the need to improve the quality of climate change education

In order to assess the effectiveness of teaching methods and CCE programmes in high schools in general, the study included a survey questionnaire on the level of improvement in knowledge and behavior of students who learned about climate change in high schools.

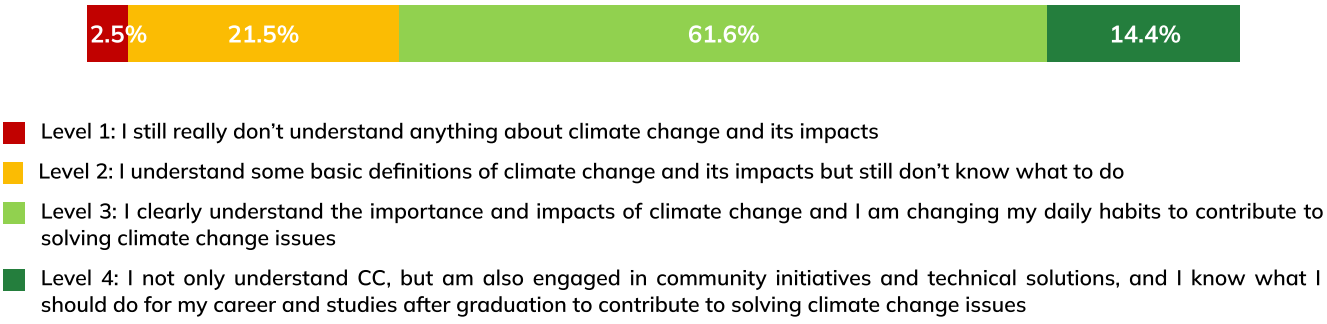

Figure 8: Level of improvement in student knowledge and behavior after participating in a CCE program at the high school level

85.6% of students reported that they had studied climate change at school. Among those students, 61.6% had changed their personal behavior in daily activities.`A minority (21.5%) understood some basic definitions of climate change but did not know what to do, and only a few (2.5%) did not understand anything about climate change. This shows that the current CCE has provided some preliminary knowledge to students, raised their awareness, and driven behavioral change on a basic personal level. However, more needs to be invested in better promoting students' active efforts to address climate change issues through community projects or provide them with adequate career orientation associated with green development, contributing to mitigating the impacts of climate change towards sustainable development after completing high school. Moreover, the distribution rates of student knowledge improvement and behavioral change are differentiated among students from disadvantaged groups and between rural and urban areas, which will be analyzed in more detail in Section 3.3 below.

When analyzing the correlation between the variables of behavioral change[12] and motivation for learning about climate change in the survey data, the study showed a strong relation between students' motivation and behavioral change. The most significant change is recorded among those who perceived that they had been impacted by climate change in the last five years. In contrast, students who did not have a specific motivation to learn about climate change had the lowest level of behavioral change. This is considered as a special point that needs to be paid more attention when developing curricula and teaching methods on climate change, with correlation to the local climate change impacts close to students' feelings to bring about greater effectiveness in motivating better behavioral change and actions from students.

52.4% of students thought that **teachers should improve their teaching methods** to increase the effectiveness of the official curriculum. Two new types of learning methods most of the students proposed include **learning through actual case studies (47.3%) and game-based in-person and online learning (36.9%).**

Photo: LCOY Viet Nam

[12] The study uses the ANOVA TEST to check the correlation between variables, the level of behavior change and the motivation for CC learning. In particular, mean is the average value. The level of behavior change ranges from Level 1: No awareness or understanding about CC and its impacts to Level 4: Full understanding of CC impacts and either participating in community initiatives, technical solutions, etc. or knowing how to contribute to tackle CC after high school graduation.

3.2.4 Information channels for accessing climate change knowledge and the role of online information networks

In order to understand and compare the correlation between the educational environment at school and other information channels for students to access climate change knowledge, the study surveyed students on common information channels recently. Figure 9 presents the three most popular information channels from which students get climate change information and knowledge.

Figure 9: Top three most popular information channels that students use to learn about climate change

The study also explored students' views on the effectiveness of these channels to provide climate change information. The internet (online news and informational web pages) and social media continued to take the leading position with the highest effectiveness level, 91.1%, while traditional channels such as TV news, radio, and print newspapers ranked second (87.2%). A noteworthy point is that extracurricular activities organized by young people or schools, although they did not have a high popularity level, ranked third in terms of effectiveness (79.5%). On the other hand, knowledge taught in schools did not reach the top three, with only 72.2% of students' votes on effectiveness. This result shows that online information channels are emerging as a primary source of effective knowledge for students. In contrast, the quality of CCE in schools still has limitations to becoming more effective. Only 57.4% of students thought that accessing information on climate change through online courses is effective, which reflects a challenge in designing the contents of online courses to be more effective and attractive for students to actively complement their knowledge on climate change beyond school hours.

Photo: www.freepik.com

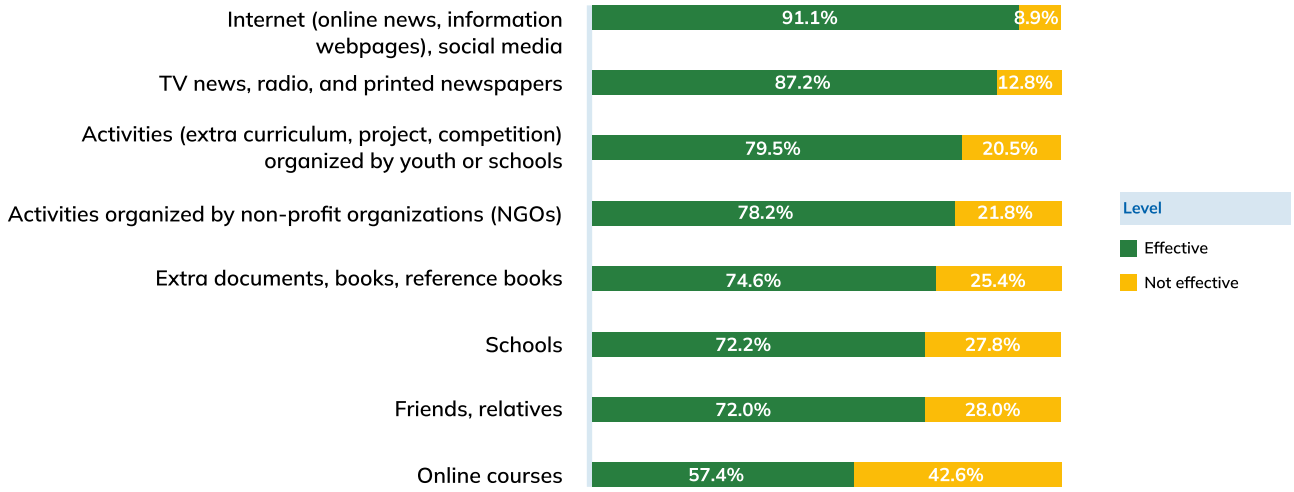

Figure 10: Effectiveness of channels used by students to learn about climate change

The results of student and teacher interviews continue to highlight the role of the internet in CCE. As mentioned, the new programme encourages students and teachers to be more proactive and creative, and the textbooks are only considered as reference materials. Teachers often have to search for more information from open sources to expand the problem to increase understanding and cultivate interest among their students. This is an opportunity for students to learn new and updated information and arouse their interest in the subject.

"Students currently have a lot of channels for getting information, and are based on those mass media to understand, even though it's not systematic, they can listen from different media and radio news to understand how urgent that problem [climate change] is"

Geography teacher from a public school in Bac Ninh province

However, online resources are bringing new concerns for students and teachers. First, these information channels are abundant but difficult to verify. Students lack the skills to find reliable sources of information; as such, the support of teachers and schools plays an important role.

Photo: www.freepik.com

"We don't have a tool to search for accurate information, to verify information, or if I want to search I don't have anyone to ask. School could be an intermediary channel to support us. For example, teachers could guide and support us on where and how to source information. Which websites? Which information web pages? I think so. We must have someone facilitate this. If not, swimming in this bunch of information is quite difficult."

Grade 11 student from a specialized high school in Ben Tre province

Even if students have information searching skills, the English language is another barrier for them to get the newest and most up-to-date environment and climate change information. Students and teachers are currently facing difficulties due to the lack of official portals in Vietnamese that provide accurate and regularly updated climate change knowledge and information for CCE.

"We only have very general materials now. I think that if I want my students to find out more about a problem, then there are not many sources of information. We also have problems if the materials are in English, since not so many teachers and students can read them."

Chemistry teacher from a public school in Ho Chi Minh City

Despite the difficulties and constraints in using the internet for CCE, this is still considered a promising information channel in the coming time to disseminate knowledge and shape CCE. Surveys on the reasons why students want to learn more about the environment and climate change point to three main causes: personal interest and curiosity, influence from social media and mass media sites, and influence from general social and development trends.

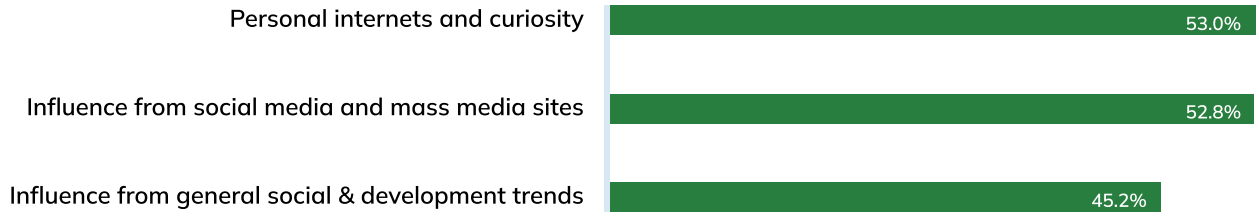

Figure 11: Top three reasons why students want to learn about climate change

This shows students' motivation to actively explore and discover new knowledge, including about climate change. This result once again reaffirms that social media, mass media, and general development trends have been and will continue to influence the thinking and behavior of high school students in learning about climate change and personal development.

3.2.5 High school facilities for climate change education

Infrastructure is an important factor in building an effective and comprehensive CCE ecosystem. In the survey, only 51.7% of students felt satisfied with the current infrastructure provided to support CCE. This means that half of the students participating in the survey are still not satisfied (31.2%) or had no experience with CCE facilities (17.1%).

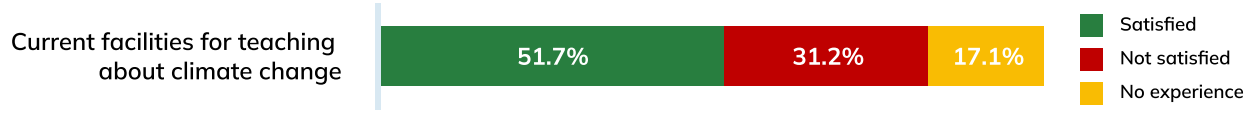

Figure 12: Students' satisfaction with current facilities for teaching about climate change

Comparing the in-depth interview data, however, there is a bright spot: schools whose students and teachers participated in the interviews had equipment such as screens, projectors, computers, and internet connections which have been enhanced over the years. This equipment helps to enhance the visualization and facilitate information for teaching and learning and teachers often use it for presentations, images, and videos during lessons.

However, access to this equipment is uneven among high schools across the country. While urban schools often have modern facilities and equipment, remote localities with high rates of poverty and ethnic minorities often have low levels of internet-connected facilities (UNESCO & UNICEF, 2020). Furthermore, facilities for experiments and practical activities related to the environment and climate change are limited. The high ratio of students per class, combined with the limited number of facilities and class duration, makes it difficult for teachers to enhance hands-on experiences for a wide range of students.

Photo: www.freepik.com

3.2.6 Extracurricular activities

Current climate change extracurricular programmes from the perspective of students

In addition to the formal curriculum, participating in extracurricular CCE activities at school and beyond is extremely important to help students translate the knowledge they have learned into action and enhance their practical understanding by connecting it to real life. These activities help students develop life skills, critical thinking, teamwork skills, and skills to solve climate change problems (Linh et al, 2023). Depending on the school and region, extracurricular activities such as "Green Sunday", "Green Summer", or "Energy Efficient Schools" are being implemented. To explore the students' view on extracurricular activities organized by their schools, the study also surveyed student's experiences and satisfaction with some of the most popular extracurricular activities.

95.8% of respondents have participated in at least one extracurricular activity organized by their school, which is a very impressive number that shows the majority of students across the country have experienced extracurricular activities. When evaluating their experience, the results were very positive: the satisfaction rate for all types of extracurricular activity was over 75%.

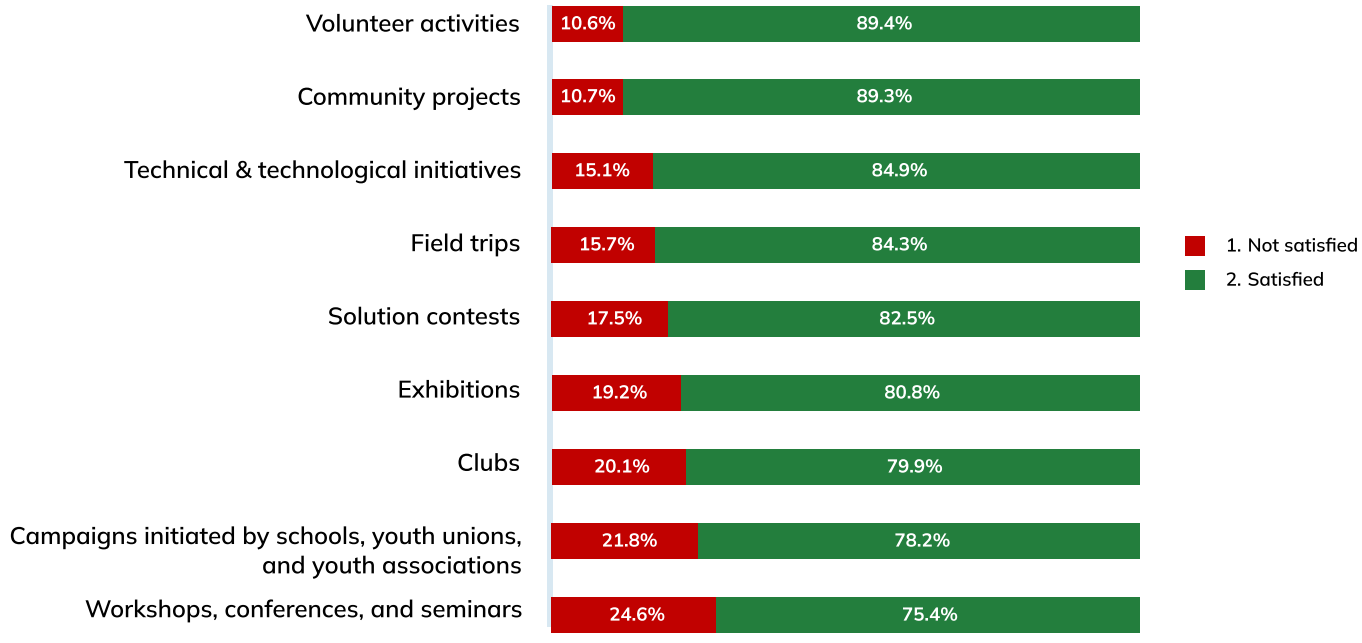

Figure 13: Student satisfaction with school-organized extracurricular activities on climate change

The top three activities that students rated were **volunteer work** (89.4%), **community projects** (89.3%), and **science and technology initiatives** (84.9%), showing that students are interested in practical activities outside the school space where they are able to take ownership and be involved in solving problems directly in their communities through social activities, projects, or local technical solutions.

"I would love to take part in field trips to areas affected by climate change and learn about the critical issues facing those localities. Being there and witnessing the direct impacts of climate change leaves a greater impression on students. This experience could help each of us to become the bridge for CCE to approach broader audiences."

Grade 12 student from a gifted high school in Lang Son province

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On the contrary, extracurricular activities within schools still have some limitations. These activities typically include **workshops, conferences, and seminars** (75.4%), **campaigns initiated by schools, Youth Unions, and youth associations** (78.2%), and **in-school clubs** (79.9%). To explore more about the constraints with the extracurricular activities inside schools, the research team interviewed several students and teachers.

For workshops, conferences, and seminars, students believe that these activities are not very popular. Only a small number of students with a background in environmental and climate knowledge can participate, which limits opportunities for students who have not had much experience in this topic to engage with climate change programmes. Even when schools do offer these activities, teachers and schools often play the role of organizing and leading them; the students have difficulty working with different stakeholders to organize seminars and workshops by themselves.

"Dialogues and seminars on climate change at my school are often chaired by teachers from the career orientation team. It seems that high school students are not allowed to organize extracurricular activities on environmental issues. I proposed this to the school, but it was not accepted."

Grade 11 student from a public high school in Kien Giang province

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Photo: www.freepik.com

For campaigns launched by schools and school-based Youth Unions, some students and teachers mentioned that these activities were implemented mainly to fulfill the targets and requirements assigned to each class and each grade. Teachers also rated that these activities did not have a strong impact because they were organized in a fragmented, unsystematic way, usually only for one or two specific days. The schools' and Youth Unions' movements, such as cleanup campaigns, are still compulsory, but not innovative enough to inspire students or promote active environmental and climate action.

"Every month, the school organizes a Green Sunday or Volunteer Saturday event where the youth groups do activities like weeding and cleaning around the campus and the surrounding areas, or sometimes students clear the bushes along the canal. These activities are just mandatory formalities, not on a voluntary basis. These activities are meaningful, but the way they were organized is not attractive."

A math teacher from a public school in Tay Ninh province

Photo: www.freepik.com

However, in some localities, Municipal Youth Unions are effectively implementing environmental and climate change activities which attract the broad participation of local people, in which students and teachers are encouraged to participate, suggesting that there is still a need for more effective coordination between the Municipal Youth Unions and school Youth Unions in implementing environmental and climate change actions.

Finally, for the operation of school clubs in particular and extracurricular activities initiated by students in general, one of the difficulties mentioned by students in the in-depth interviews is acquiring a license to organize such activities in schools and local areas. Moreover, students also had difficulties in securing financing, expertise, human resources, and relationships with relevant agencies in order to be able to implement such activities effectively. These barriers make it more difficult for students to transform from individual behavior into actions and projects that solve climate change problems, which was already challenging and is becoming more difficult for individual students.

"Honestly, the school doesn't provide enough financial support. Sometimes, we don't even have approval for our activity plans."

Grade 12 student from a public high school in Ho Chi Minh City

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The role of schools and teachers in extracurricular activities for students

Teacher interview data affirms the role of the school Youth Unions in launching movements and verifying students' extracurricular activities. Teachers can provide technical support and advice, build connections for resource mobilization, and support students' implementation of activities. It should be noted that only a small number of the teachers interviewed participated in extracurricular activities; that said, some teachers that feel particular concern about the environment and climate change voluntarily work on organizing projects and extracurricular activities for students outside of classroom hours. Collecting waste, developing small environmental projects, and recycling are a few examples of activities that teachers have organized for their students.

Photo: www.freepik.com

"One activity recycles waste to create helpful school supplies or learning models. For example, for history classes, we built a model to describe a victory, or for literature, we built a model to recreate the space and atmosphere of some specific stories and novels. (...) I provided advice and guidance to the students of the School's Book and Action Club about events such as Exchanging Books for Trees, Waste Collection, and Recycling. Based on that, the students self-implemented the activities."

Literature teacher from a public school in Bac Ninh

The positivity, proactiveness, and creativity of teachers can inspire other students and teachers. As a result, these activities encourage environmental and climate action in schools and across the entire education system.

The need to enhance extracurricular activities on climate change education for students

Extracurricular activities play an important role in motivating students to change their behavior and find solutions to solve local climate change problems. According to the survey results, up to **75.3%** of students want to have **more experiential and practical activities** to increase the applicability of CCE. Their opinions from the in-depth interviews strongly support this:

"I hope schools and local communities will have more coordinated activities so that students can access and understand more about the current situation of climate change in their locality and other areas."

Grade 12 student from a public high school in Thai Binh province

"In addition to the climate change issues integrated into the official curriculum, extracurricular programmes such as emissions reduction, awareness raising training during flag-hoisting ceremonies and class assembly hours, communications on practical actions, tree planting, etc., are very necessary and useful."

Grade 12 student from a public high school in Kien Giang province

Along with the activities that integrate practical exercises and life experience in teaching, the extracurricular activities that students want to experience the most are **community projects on climate change and environmental education (33.0%).** Students are also interested in presentations, debates, science and technology initiatives, film exhibitions, and volunteer activities related to climate change and the environment. The results show that environmental and climate change education does not have to be integrated in a concrete form. Instead, schools, youth organizations, and projects could choose the right format, which should be innovative and creative in order to engage students and create positive reactions to take more impactful climate action.

3.3 Comparison of student perspectives by gender, region, and vulnerable group

To understand student perspectives and needs for CCE in the light of gender, region, and vulnerable group, the study conducted comparisons among different groups as well as between vulnerable and non-vulnerable groups.

Regarding gender, study results show that the variables differ less than 5-6% on many aspects in the perspectives between male and female students. Female students report slightly higher on access to CCE and feeling the effects of climate change, while male students report slightly higher on the highest level of behavioral change after studying climate change. This minor between male and female students partly shows positive signs on ensuring gender equality in access to CCE at the high school level.

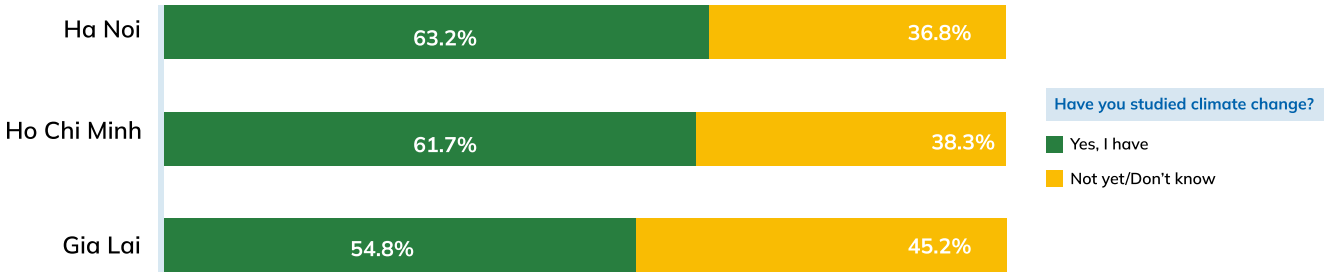

Figure 14: Proportion of students learning about climate change in three provinces and cities with a large sample size, representing both urban and rural areas

Photo: www.freepik.com

When comparing students living in rural and urban areas, survey results show that urban students have more opportunities to learn about climate change than rural students. When the three localities with the highest number of respondents are compared, namely Hanoi, Ho Chi Minh City, and Gia Lai province, the proportion of students learning about climate change in Hanoi is the highest (63.2%), followed by Ho Chi Minh City (61.7%), while Gia Lai, a Central Highlands province, has a lower percentage of students learning about climate change, **only 54.8%.**

After learning about climate change, the proportion of students with behavioral change in urban areas is also generally higher than in rural areas. However, the proportion of core-actor students who have implemented community initiatives, technical solutions, or have career orientations towards contributing to addressing climate change in rural areas is not any lower than in urban areas. This means rural students have the potential to be agents of change in local communities if they have support via capacity building, especially through improved CCE in local areas.

Photo: UNDP Viet Nam

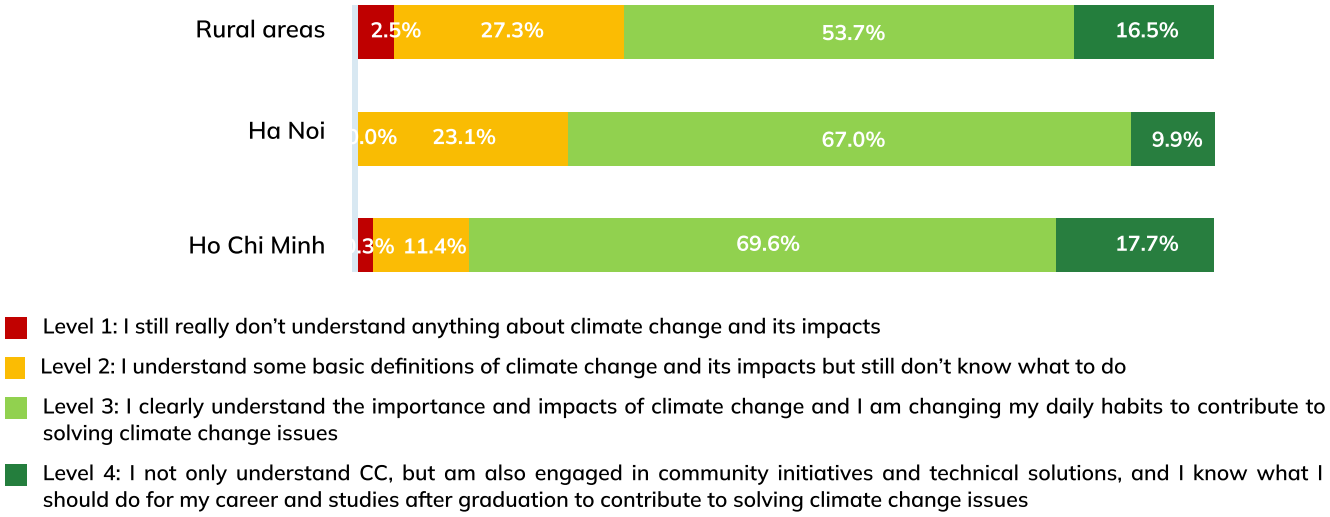

Figure 15: Comparison of behavioral change between urban and rural groups after learning about climate change at the high school level

Qualitative data also shows the potential of the internet to enable students in rural areas to access and learn about climate change. The popularization of the internet has contributed significantly to ensuring equitable access to CCE.

"As a student in a rural area, I do not find it difficult to access CCE [...] The difficult thing is to have an appropriate teaching method to guide students on climate change knowledge and the actions they should take to raise public awareness about climate change. Students are also aware that this is not a compulsory subject, so they can have more fun and flexibility when approaching this issue. Currently, on the internet in general as well as on social media such as Facebook, TikTok, etc., there are many video clips and materials on climate change made by individuals and organizations. I hope that I myself and others around me will know more about climate change, especially the environmental changes that are happening in the area where we live."

Grade 10 student from a public high school in Ninh Thuan province

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Photo: www.freepik.com

Rural students also have more difficulty accessing programmes and activities outside their schools, since these are more often held in big cities.

"I think the biggest problem for students in rural areas and remote provinces, like me, is the limited access to quality education, especially CCE, due to constraints in terms of teacher quality, teaching methods, the focus of education, etc. The awareness of rural people about climate change is also very limited, so we have almost no chance to get climate change knowledge from our families, friends, or relatives (or the surrounding environment), which should be a very important channel but is currently not effective at all. Students in rural areas are not supported much to participate in conferences and dialogues on climate change, since most of these events take place in Ho Chi Minh City or Hanoi, while the financial capacity of students in remote areas is still too limited to join."

Grade 11 student from a gifted high school in Ben Tre province

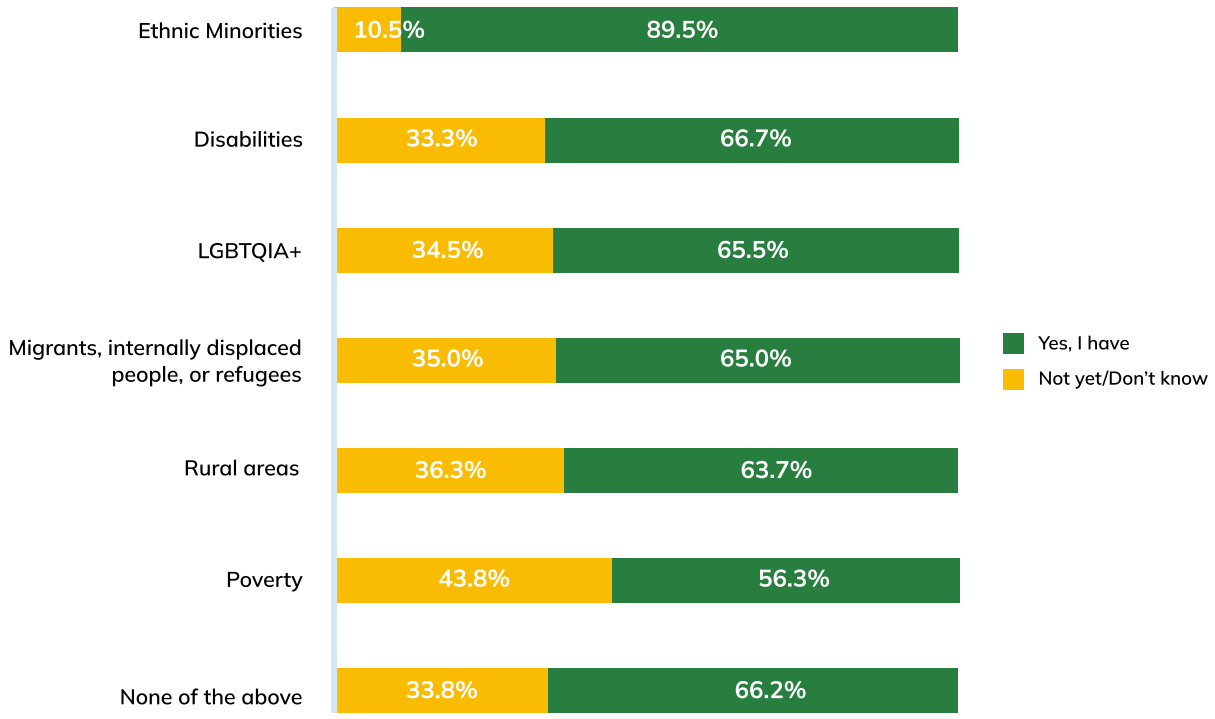

Figure 16: Proportion of students from disadvantaged groups who believe that they have learned about climate change and environment in high school

Photo: www.freepik.com

For vulnerable groups, more than 80% of students in these groups reported that they feel the impacts of climate change. Most groups have the more or less the same level of access to CCE as non-disadvantaged students (>60%). In particular, ethnic minority groups showed the most positive results: up to 89.5% said that they had learned about climate change. In contrast, only 56.2% of students categorized as in poverty have access to climate change knowledge; this group should be paid more attention. Students who perceive that they were affected by climate change impacts in the last five years normally have the highest levels of behavioral change ($p < 0.001$) after accessing CCE. Most of them understand the significance and impacts of climate change and are changing their daily habits to contribute to addressing local climate change issues.

However, the methods, curriculum, facilities, and applicability of the CCE programme still do not meet student needs. Considering these three criteria of the official curriculum for those who learned about climate change and the environment at high school, the following groups have a **higher than average rate of dissatisfaction:**

Teaching methods for CCE	*Facilities for CCE*	*Applicability of CC knowledge to real life and future work*
(1) Poverty (44.4%)	*(1) Migrants (53.8%)*	*(1) Migrants (53.8%)*
(2) LGBTQIA+ (38.9%)	*(2) LGBTQIA+ (52.8%)*	*(2) Poverty (44.4%)*
(3) Ethnic minorities (35.3%)	*(3) Poverty (44.4%)*	*(3) LGBTQIA+ (38.9%)*
(4) Migrants (30.8%)	*(4) Ethnic minorities (41.2%)*	

Photo: www.freepik.com

When being asked about their climate change learning experiences, many respondents mentioned the lack of access to applied knowledge and activities on climate change in their schools. According to the students, the schools they attended provided little climate change information, the teaching methods were quite traditional, and there were not many activities about climate change. Regarding access to information, the students often explored multiple sources. Compared to other information channels, schools were not considered an effective channel for students from vulnerable groups. **Ethnic minorities and LGBTQIA+ groups** self-assessed that accessing climate change information at school was in fact ineffective, at 36.8% and 43.6% respectively, which partly demonstrates the difficulties involved in bringing CCE closer to these two target groups through schools. A large proportion of students from **poverty, LGBTQIA+, and ethnic minority youth** considered their access to climate change activities (courses, projects, and competitions) organized by the Youth Unions or schools to be ineffective, with the percentage of students selecting "Ineffective" being 31.3%, 27.3%, and 26.3% respectively. On the other hand, the internet continued to be highly valued by the students from vulnerable groups. Effective access to environmental and climate change information through the internet among all vulnerable groups reached over 75%.

Especially for migrant students, qualitative data also show that this group is highly aware of the impacts of climate change. This study did not have the opportunity to reach students who were displaced due to climate change, and so did not record responses from students on the effects of climate change on migration, as those have been mentioned in previous studies (Mekong Development Research Institute & Oxfam Viet Nam, 2022; UNICEF, 2023). However, socioeconomic migration from one region to another, especially from rural to urban areas, also changes students' perceptions. Firstly, such migration makes students aware of climate differences, and thereby makes them more aware of and concerned about the impacts of climate change.

"I used to live in a mountainous area of the Central Highlands. I witnessed many changes in the weather and climate. I noticed local households were gradually cutting their use of heaters, which they used to utilize in the cold season to cope with the cold in the mountainous areas, and were shifting to using fans or even air conditioners instead. The school did not tell us that this was an impact of climate change, and in fact, no one paid attention to it. People just accepted it as a natural process, and it was very difficult for me to understand that. Only when I moved to Phu Quoc and had more interaction with young people working on environmental projects did I suddenly realize that it was because of climate change."

Grade 10 student from a public high school in Kien Giang province

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The study also recorded a special case in which migration created favorable conditions for students to learn about climate change, especially in the high school environment. Below is a story shared with the research team by a grade 11 ethnic minority student at a public high school in Bac Giang province in which he speaks about the improved access to information when he migrated to another area. This case shows that having access to information is an important factor in helping students in vulnerable groups to raise their awareness and thereby be more likely to take climate action.

"I am an ethnic minority student. I was lucky to move to the central town of the district in Bac Giang province. Here, I had early access to the media and knew about the environmental and community services, such as climate change and global warming... When I went to high school, I was very happy to learn that the school had an environmental club, and with the ambition for voluntary and environmental protection activities, I registered to become a member. During my time working with the club, I made a lot of new friends, had the chance to work with my senior classmates, learned more soft skills, and especially participated in various environmental protection activities."

Grade 11 student from a public high school in Bac Giang province

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Clearly, when considering the experience and perceptions of vulnerable students, learning about climate change in high school still faces many challenges that demand further support in order to improve the school curricula, teaching methods, facilities, and extracurricular activities that can help them to understand how climate change might affect both themselves and their local communities, and thereby change their behavior and take action to create solutions for adapting to climate change.

Photo: www.freepik.com

Chapter 4

Trends, Opportunities, and Challenges to Improve the Effectiveness of Climate Change Education

Based on the above analysis of students' needs and perspectives on CCE, the below section highlights key trends, opportunities, and challenges to improving the quality of CCE in Vietnamese high schools.

Photo: UNDP Viet Nam

4.1 The role of digital transformation and digital education

Amidst the prevailing trend of digital transformation, education has witnessed substantial evolution. Adopting technology in education (digital education) is now seen as an inevitable trend. In the realm of CCE, the research team observed that all students and educators have addressed the aforementioned facets of CCE. This trend is creating many opportunities to further improve CCE's effectiveness for students.

One of the opportunities for digital transformation is the **advancement of technology and teaching tools to enhance the integration of digital technology for CCE within schools.** The implementation of new learning models supported by contemporary technologies such as smart screens and projectors enables educators to enhance visualization and elevate the quality of instruction, thereby fostering increased student engagement with climate change knowledge.

Digital transformation in education also has the potential to **increase opportunities to access open learning sources and diversify learning spaces about climate change through the Internet.** One of the factors facilitating the development of CCE in the fourth industrial revolution (industry 4.0) is the widespread development of the internet and the increasing use of computers and smartphones with internet connections throughout the provinces and cities of Viet Nam (Nguyen Thi Hien, 2019). Consistent with previous studies, the findings of this study show that students access and learn about climate change knowledge through the internet and social media. Learning about climate change at school goes beyond textbooks and teachers. It becomes more personalized when students can actively research, refer to, or study content that suits their abilities and interests. The popularity of social media also presents an opportunity for students and teachers to easily connect with others, share, and learn information and knowledge about climate change.

Photo: www.freepik.com

Moreover, this trend is providing **opportunities to facilitate socialization in CCE.** With the proliferation of technology and widespread internet-connected devices, information sources are easily accessible without necessarily going through formal education. Learning about climate change can be done at any time and place, expeditiously and proactively. In particular, the ongoing digital transformation and increased access to technology have played a pivotal role in promoting equity in understanding and accessing climate change education, especially for marginalized groups in rural areas and ethnic minorities.

However, the digital transformation to improve the effectiveness of CCE still faces many challenges.

One of the significant challenges for climate change education in the digital learning era is **ensuring that schools possess adequate network physical infrastructure and facilities.** Specifically, this entails guaranteeing that students in schools and localities have access to the internet and internet-connected facilities such as projectors and televisions, especially in remote areas with more hardship conditions. This is also one of the challenges highlighted as "significantly affecting the management of educational activities" (Bui Thi Hue et al., 2022).

On the other hand, as more people use the internet and technology to teach, learn, and access climate change information, it is important to note the challenges in **improving teachers' and students' capacity to use technology and search for useful information.** Strengthening digital literacy skills[13] for students and teachers should be a top priority to enhance the quality of climate change education in the evolving landscape of digital education.

The application of digital technology tools for CCE has contributed to expanding the space for research, learning, and information retrieval on the Internet for both educators and students. This should be further supported by all stakeholders, including educational institutions, families, and relevant ministries and agencies.

4.2 National policies, guidelines, and action plans

As mentioned in Section 1.2, CCE is an important objective in Viet Nam for reducing vulnerability and increasing the resilience of young people in their joint efforts to respond to climate change.

[13] Here use the concept of Digital Competence according to Luong Dinh Hai (2023). Excerpted.

The legal framework, national strategies, support, and commitment of the whole Vietnamese political system in the updated 2022 NDC and the National Plan for Adaptation to Climate Change 2021-2030 provide a strong foundation and many opportunities to develop an education system that effectively integrates climate change content in order to build adaptation capacity and a workforce for a low-emission economy. Furthermore, this legal and policy framework presents promising opportunities to improve the implementation of CCE activities in schools.

One opportunity for CCE in schools involves **the 2018 GE programme**, which strongly promotes creativity and flexibility in teaching and learning and offers a good opportunity to integrate climate change into the official curriculum, along with a focus on the context and impacts of climate change in local areas through practical subjects such as "Experiential Activities and Career Orientation" and "Local Education". This also raises awareness of the role of teachers and students in CCE[14] and allows for flexibility in using various tools, learning materials, and methods to learn about climate change.

In order to improve the effectiveness of CCE, it is important to address the challenges that still remain.

The government has implemented policies on CCE, but **there are still limitations in the policy implementation process, especially in providing skill training and career orientation for students.** Despite rapid changes in climate change policies following global trends, the current education system lacks adequate updates and reforms. Official materials, extracurricular activities, and climate change adaptation tactics and skills are still lacking in CCE. Although CCE mainstreaming aims at improving the quality of human resources[15] (NDC Viet Nam, 2022) and focuses on career orientation[16] (MOET, 2017), CCE contents do not currently address many of these issues, especially green careers and green jobs. This is a big gap to ensure that future human resources are able to contribute to climate commitments in green sectors such as renewable energy, circular economy, climate-smart agriculture, and the carbon economy.

[14] In the GE Programme 2018, as mentioned, teachers shall be responsible for organizing teaching activities, tests, orientations, while students shall actively participate and interact in the learning process.
[15] Section 5 of the updated NDC 2022 mentioned solutions to promote NDC implementation, including human resource development, *"Integrating climate change response into education and training curricula at all levels of education; improving the quality of curricula on climate change response".*
[16] Objectives of the GE programme: *"The high school education programme supports students to constantly improve their capacity, labor quality, civic quality, awareness of rights and obligations towards the country; lifelong learning;* ***the ability to choose jobs suitable*** *to their interests, conditions and circumstances for higher education, vocational college or working life; capacities to adapt to changes in the context of globalization and the new industrial revolution."*

Photo: www.freepik.com

On the other hand, **the current CCE programme in schools has not capitalized on opportunities for international cooperation on climate change**for education and training. Many high schools do not have cooperation programmes for the exchange of climate change knowledge or training for students in global skills. In order to facilitate students' access to these opportunities, it is necessary to align school activities with climate programmes and projects. Two potential climate programmes and projects that promote international cooperation in education to enhance youth capacity in climate action include the Climate Promise[17] and Green Youth Labs[18].

Another key challenge affecting the quality of climate change education in schools is the **lack of official and reliable sources about climate change.** In-depth interviews revealed that both students and teachers struggle to find this information. To date, teachers mainly rely on online sources to find practical data for integrated teaching on climate change.

Thus, in order to improve the effectiveness of CCE, it is important to take advantage of the government's policies, guidelines, and action plans on climate change, as well as the 2018 GE Programme. Successfully implementing these policies and guidelines requires coordination among different stakeholders, including relevant ministries, organizations, and agencies, especially between the Ministry of Natural Resources and Environment, the Ministry of Information and Communications, and the Ministry of Education and Training. Moreover, in the coming time, the NDCs that countries submit by November 2025 have the potential to unlock opportunities to reach net-zero emissions by mid-century, as stated in the Paris Agreement. One of the key areas of the NDC 2025 will be the voices, priorities, and recommendations of the whole of society, including youth, and support for a just transition in the ensuing implementation of the NDC.

4.3 Teacher competence, knowledge, and skills

Educators play a pivotal role in aiding students' comprehension and awareness of the impacts of climate change. Nevertheless, there are both opportunities and challenges associated with teachers' knowledge, skills, and capacity that must be addressed to enhance the effectiveness of teaching about climate change.

[17] The UNDP's Climate Promise Programme seeks to support 115 countries in enhancing their Nationally Determined Contributions (NDCs) in 2020.
[18] The project is part of the International Climate Initiative (IKI) programme organized by the Ministry of Environment, Nature Conservation and Nuclear Safety (BMU) and the German Ministry for Economic Affairs and Climate Action (BMWK) with technical support and organizational cooperation from Live & Learn, Friedrich-EbertStiftung Institute Viet Nam and Research Center for Adaptive Capacity Building (CAB).

Regarding opportunities, the **willingness and ability of teachers to take initiative** are favorable conditions for implementing integrated teaching about the environment and climate change. According to the interview data, teachers are actively searching for documents from the internet as they try to adapt classroom activities and contents to meet the needs of students and the actual situation in their localities. Some teachers have also taken the lead in mobilizing resources from different organizations outside their schools and organized experiential, hands-on activities for their students. This has strengthened the bond between teachers and students in the process of sharing knowledge about climate change while also exposing students to a wide range of information and learning methods.

However, there are still many challenges hindering teachers' ability to implement CCE and activities.

First, **teachers lack support and training for integrated teaching skills on climate change and how to build and organize experiential activities for students.** Most teachers have not been trained in how to integrate CCE, but nevertheless have to prepare their own materials and find ways to integrate climate change content into the curriculum using many different methods. The question of how to integrate climate change content effectively in the context of interdisciplinary integration is still a big challenge for teachers, particularly when many find that the teaching time is limited compared to the volume of knowledge to be taught. In the in-depth interviews, teachers shared that they felt they lacked the skills and were not confident in designing appropriate environmental and climate change experiential projects and activities for students.

The **lack of resources for climate change teaching** is another challenge. Limited understanding of the existing resources (where to find and how to use them) was often mentioned as a difficulty when implementing CCE (Chopra et al., 2019). The lack of official climate change databases, especially CC information and documents in Vietnamese that are regularly updated, is also hindering teachers' ability to teach.

Obviously, in order for teachers to develop better skills for teaching about climate change, the role of MOET is indispensable in providing them with training, official sources, and teaching materials on climate change. At the same time, domestic and international organizations can play a very important role in sharing and communicating information about climate change-related programmes and projects to schools and teachers.

Photo: www.freepik.com

4.4 Trends and skills for student learning and self-study

In high school CCE, understanding the trends, opportunities, and challenges in students' access to climate change knowledge is vital for developing effective solutions to enhance its quality and effectiveness.

First, the opportunity to improve the effectiveness of CCE comes from **students' ability to learn and conduct self-study about the environment and climate change.** According to the survey results, students' motivations to seek knowledge about climate change mostly came from their own curiosity and interests. Some students were highly proactive about searching for and participating in both curriculum and extracurricular activities. One of the advantages of extracurricular activities is that some school clubs are organized and run by students. For example, students can establish and operate some types of school clubs to promote environmental and climate change education, such as Book and Action clubs[19], scientific research clubs, green career clubs, energy, conservation, or environmental/ climate debate clubs and competitions, etc. Currently, there are a variety of environmental clubs founded and operated by students that actively seek opportunities for cooperation and exchange in competitions, programmes and projects on climate change, both in Viet Nam and abroad. Leveraging resources from highly proactive students has the potential to be a great opportunity for spreading their influence and building a community of students who care about and proactively respond to climate change.

The authors also recognize **opportunities to mobilize resources and financial and technical support from organizations and businesses investing in the green sector and responding to climate change.** With these resources, students can implement climate activities and projects and replicate their own models.

Along with the development of the internet and online opportunities as mentioned above, another opportunity for students to develop self-study skills is through **e-learning programmes to promote self-study and learning.** Students can use digital learning platforms and portals such as the Climate Learning Hub, Green Generation, or global e-learning platforms such as Coursera, EdX, etc., to enrich their climate change knowledge and information.

In addition to the above opportunities, some of the following challenges need to be taken into account in order to create a better environment for students to learn about climate change.

[19] For more information, please visit: https://sachvahanhdong.org/

Photo: www.freepik.com

For student-led activities on environment and climate change, **the lack of support from stakeholders such as schools, teachers, or organizations inside and outside the school is a challenge.** Not all schools and localities actively provide support in terms of administrative procedures and approvals for student activities and projects, especially those without a legal status. In parallel, a lack of expertise, finance, and long-term sustainable development strategies hinders the implementation of students' activities and their lasting impact. These activities, if conducted, often only take place over short periods of time. Students also face difficulties in obtaining financial support, since fundraising activities require approval from the school.

In order to facilitate the implementation of student projects, local and international NGOs and other organizations can provide specific support, create climate change platforms and learning spaces, or provide small grants or financial/technical support, thereby promoting students' environment and climate initiatives.

4.5 Climate change learning spaces and organization of activities

Learning about climate change and the environment has specific requirements, including conditions for direct learning, landscape approach, and experience. Education does not only take place in the classroom, but can also take place anywhere, with the fostering of formal and informal learning places to develop students' competencies and skills (Dang Hoang Vu, 2021).

Photo: UNDP Viet Nam

At present, **extracurricular activities organized by schools are often launched by the school's Youth Union in collaboration with the local Youth Union, with teachers providing support.** This is an opportunity to ensure their smooth and effective implementation. Currently, extracurricular activities of provincial and city Youth Unions implemented in educational institutions reach many students through projects and volunteer activities, such as Green Sunday and Green Summer events for cleaning up and maintaining the environmental sanitation of local areas. According to the in-depth interview results, experiential activities are being especially effectively implemented by provincial and city Youth Unions in localities affected by climate change and disasters such as Hoi An. They are highly relevant to the local context and have been well received by the students.

Another opportunity comes from the **new orientation of the GE Programme 2018 with the emergence of the subject on experiential activities,** which includes a number of obligatory lessons. This programme allows for official class hours on climate change and the environment to provide students with knowledge and information about the harmful impacts and drivers of climate change and other environmental issues.

Some schools are more proactive in exploring suitable models for CCE. This is a good opportunity for students to gain more climate change and environment experiential learning. Education generally strictly follows the school's orientation, and therefore the proactive role of schools in implementing CCE for students is inevitable. Some schools also learn from other schools about how to organize such activities and adopt new models for students.

"[The school] already had activities for students to visit Ninh Binh province. After going to FLC Thanh Hoa, the students went to pick up trash and clean up the beach. [....] In the Long Bien area, there are some schools conducting [this activity]. And we found it very meaningful, so we organized it."

History teacher in a public high school in Hanoi

Some ways schools can increase community coherence via experiential activities include **using local landscape spaces as climate change learning centers and organizing climate change knowledge exchanges with other schools.** To foster student creativity, knowledge exchange, startup competitions, and art performances are also potential opportunities for schools to encourage students' participation in climate change solutions. Accordingly, students can take advantage of school spaces and facilities as well as external resources to turn schools into innovation hubs, community idea incubators, or green startups. They can also take the lead in projects and activities to clean up the school environment through waste collection and sorting, planting trees, saving electricity at school, etc.

Along with these opportunities, there are also some challenges in establishing climate change and environment learning spaces and activities.

Firstly, **many schools still lack facilities and spaces for practical and experiential activities for students** due to limited conditions and resources. Some schools need more support in terms of facilities for activities that allow students to learn about the environment and climate change, **especially in remote areas.**

Secondly, as mentioned in Section 3.3 of the report, because projects are often implemented in large urban areas, **vulnerable students have limited access to opportunities to participate in national programmes and competitions or contests organized by local and international organizations.**

The last challenge, although not the least, is **how to motivate and ensure voluntary and effective participation by students.** Sometimes the Youth Union activities launched by the schools and those launched by local Youth Unions are not aligned. The Youth Union activities organized by the schools, as noted from in-depth interviews in some places, may just be held to meet set targets for schools and classes, and sometimes it is obligatory for students to join. Some teachers reported that they did not think this way would work. In order to motivate students to participate, schools need to have more sharing sessions to raise awareness about the meaning of activities before asking students to participate, and thereby make them more aware of the importance of environmental protection and climate change response.

In order to ensure the effectiveness of climate change and environmental education, learning spaces and insightful activities are of crucial importance. It is necessary to ensure the collaboration of stakeholders and their support to schools in the development of learning spaces and experiential activities to provide suitable and inspiring learning environments, which can encourage students to be more proactive in learning.

Photo: www.freepik.com

4.6 International cooperation and learning programs and projects

In the context of the internationalization of education, international integration and cooperation are two priorities to promote and improve the quality of education (Le Anh Vinh and Tran My Ngoc, 2023). For CCE, international cooperation and learning projects on climate change can provide opportunities to improve its effectiveness.

First of all, **major national and local programmes, as well as projects and models from national and international organizations and partners,** can inform the development, finalization, and replication of CCE integration into the high school curriculum. Some good examples include "Green School" (Live & Learn), "Exchange waste for plants" (Green Life)[20], battery collection, and waste recycling.

Next, the **opportunity to mobilize potential finance and support** from local and international organizations, businesses, and funds for investment in facilities in CCE. With the policy to promote the socialization of education[21], **resources from parents and the community** are also important for supporting the improvement of facilities and resources for the experiential teaching and learning process.

Another opportunity comes from the **resources of youth networks and youth organizations working on climate change issues.** These networks and organizations represent the ability to self-organize, mobilize resources, and cooperate with stakeholders to promote and improve the capacity of young people in climate action. Some youth networks and organizations actively working in climate response and action include the Youth4Climate Policy Working Group (YPWG), YNet Viet Nam[22], Viet Nam Youth Parliament (VNYP)[23], YOUNGO[24], 2030 Youth Force Viet Nam Network[25], and Movers[26].

[20] For more information, please visit: https://www.facebook.com/Gogreen.together.2025
[21] The Government's Resolution No. 35/NQ-CP dated 04/06/2019 on strengthening the socialization to invest in the development of education and training in the period of 2019-2025 mentioned "Socialization of education and training should be considered as an indicator in the socio-economic development of the locality".
[22] For more information, please visit: https://ynetViet Nam.org/
[23] For more information, please visit: https://www.facebook.com/VietNamYouthParliament
[24] For more information, please visit: https://youngoclimate.org/
[25] For more information, please visit: https://www.facebook.com/youthforce.vietnam
[26] For more information, please visit: https://www.youthcolab.org/movers

Photo: www.freepik.com

At present, **many activities, events, competitions, programmes, scholarships related to climate change and environment** are being organized for students and young people across the country by the government, private enterprises, and NGOs with strong technical and financial support. Some NGOs and projects are hosting activities to promote environmental and climate change education for young people and students, such as Live&Learn, Green In, Green Youth Labs, etc. This is also an opportunity for students to approach and participate in global activities, to enhance their climate change learning.

In CCE cooperation, the following challenges should be taken into account in order to promote better environmental and CCE programmes and projects:

The lack of coordination in the implementation of environmental and CCE activities among organizations, projects and schools is a challenge to the enhancement of their effectiveness and impact. Some are still fragmented and lack alignment with national and local priorities, etc., leading to inconsistent implementation (Le Anh Vinh and Tran My Ngoc, 2023). Therefore, it is necessary to leverage different resources and networks to provide support in terms of expertise, finance, and communication in a well-coordinated way among different organizations, projects, and other stakeholders.

Language and skills are still barriers for students to participate in international environment and climate change programmes and projects, especially for those in remote and mountainous areas. More opportunities for training should be considered for interested students.

In conclusion, international cooperation in CCE programmes and projects has great potential to bring a variety of learning experiences to students and unlock new opportunities. In order to enhance students' climate change learning in the future, local and international organizations, schools, and governments need to put in effort to strengthen coordination on climate change activities, improve access opportunities, and support skillbuilding, including language skills for students.

Photo: www.freepik.com

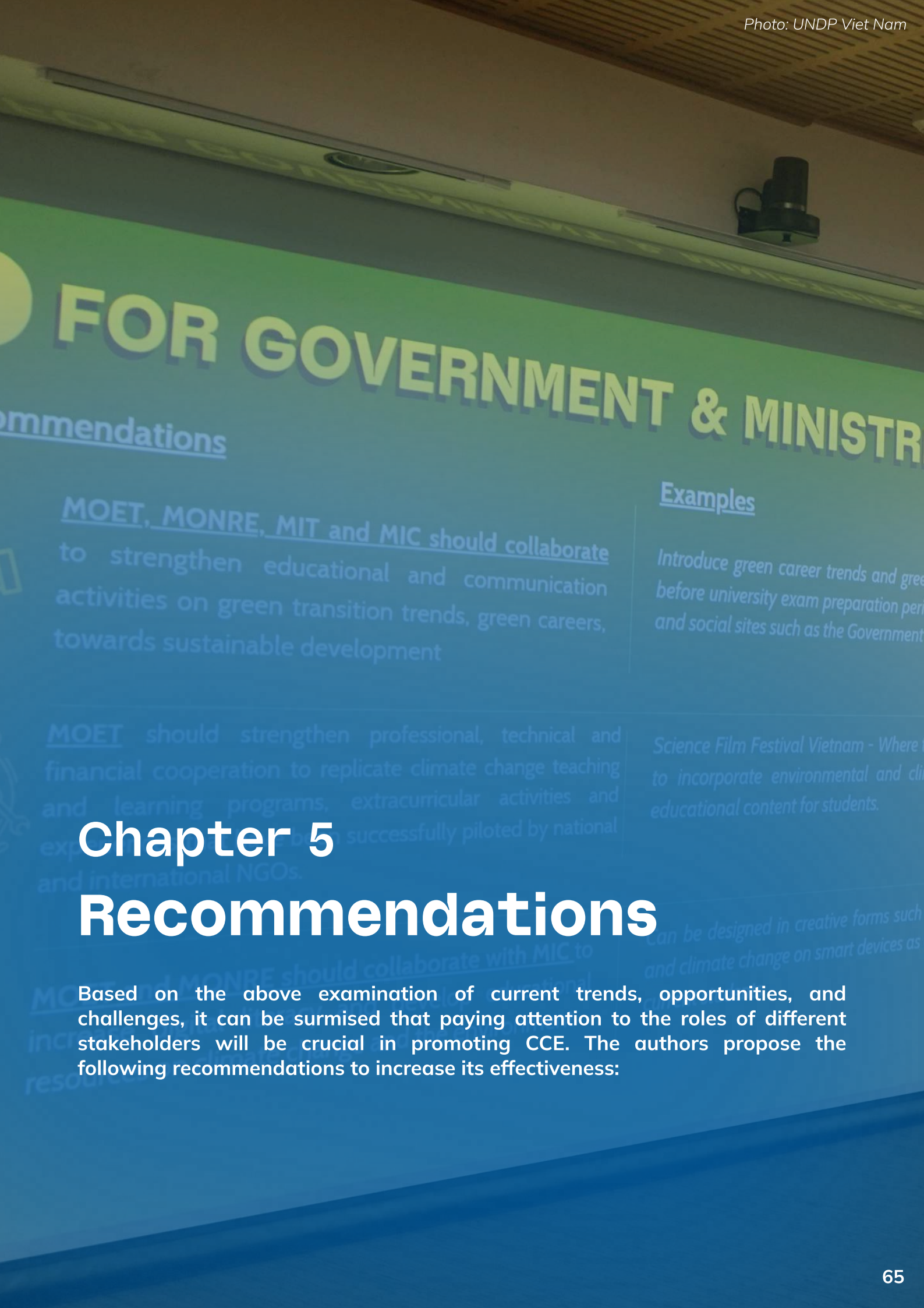

Photo: UNDP Viet Nam

Chapter 5
Recommendations

Based on the above examination of current trends, opportunities, and challenges, it can be surmised that paying attention to the roles of different stakeholders will be crucial in promoting CCE. The authors propose the following recommendations to increase its effectiveness:

5.1 For the government, ministries and departments

- The **Ministry of Education and Training** should coordinate with relevant ministries and agencies to strengthen multi-platform education and communication activities to disseminate the trend of green transformation and green jobs towards the target of net zero emissions by 2050. This will motivate students to be more proactive in learning and taking part in climate action.

- The **Ministry of Education and Training** and **local/provincial departments** should pilot CCE as a compulsory part of subjects such as "Local Education" and "Experiential activities and vocational guidance", adapted to the context of climate change in each region.

- The **Ministry of Education and Training** and **local/provincial departments** should develop training programmes on the integration of CCE for teachers in school subjects suitable to local contexts.

For example: using a variety of innovative teaching methods such as learning through actual situations, game-based learning, implementing community climate change and environmental education projects, and providing opportunities for students to discuss and debate on climate change and environmental issues.

- The **Ministry of Education and Training** and the **Ministry of Natural Resources and Environment**, in collaboration with the **Ministry of Information and Communications**, should strengthen digital capacity-building programmes and develop digital learning tools for environment and climate change issues tailored to local contexts, with priority given to developing materials for rural and vulnerable groups.

For example: designing learning tools in new formats, such as environmental and climate change games on smart devices.

- The **Ministry of Education and Training** should consider offering support to scale up CCE programmes that have been successfully piloted by national and international NGOs.

For example: the Science Film Festival Viet Nam, an event where teachers can act as ambassadors to incorporate environmental and climate film materials into educational contents for students.

5.2 For schools and teachers

- **Schools** should mobilize investment from diverse sources and opportunities from the government budget, international financial support, funds from private enterprises, and parents to build and upgrade facilities for practical and experiential activities related to climate change, such as climate change learning spaces and green schools.

- **Schools and teachers** should coordinate with businesses to integrate information about green jobs into experiential activities and career guidance to raise students' awareness about their career prospects related to sustainable development and climate change adaptation/mitigation, such as renewable energy, circular economy, and climate-resilient agriculture. This is foundational information for students to take a step forward in acquiring more useful knowledge and skills in the future.

- **Teachers and schools** should collaborate with other stakeholders to build a network for sharing information and leveraging expertise and experiences in CCE integration among localities and schools in order to diversify and spread effective, innovative integration methods.

- **Youth Unions at the school level** should organize sharing sessions on environmental protection and climate change activities prior to their implementation to inspire and engage more students in their movements.

For example: organizing workshops for the school on plastic waste before organizing waste collection and cleanup activities.

- **Schools and localities** should support licensing/approval processes for student-led activities related to climate change and environment, as well as assistance in terms of administration, technical advice, communications, facilities, financing, and coordination for such events.

For example: providing legal sponsorship and mentorship for student projects funded by other donors.

Photo: www.freepik.com

5.3 For students

- **Students** should make use of online information sources, especially open-access courses provided by reliable platforms available in Vietnamese such as the Youth4Climate Learning Hub, Green Generation, and/or online platforms such as Coursera and EdX to actively learn more about climate change.

- **Students** should apply their environmental and climate change knowledge to make positive changes and promote the adoption of green lifestyles within their families, schools and communities.

- **Students** should actively participate in networks such as the Viet Nam Youth4Climate Initiative[27], YNet Viet Nam, YOUNGO, 2030 Youth Force Viet Nam, YECAP[28], and Green Generation[29] to share information, opportunities, and support each other in learning and implementing extracurricular activities and climate action.

[27] See more at: https://www.facebook.com/gioitrehanhdongvibiendoikhihau
[28] For more information, please visit: https://www.yecap-ap.org
[29] For more information, please visit: https://thehexanh.net

Photo: UNDP Viet Nam

5.4 For international organizations, non-governmental organizations, businesses, and other stakeholders

- The **United Nations**, in collaboration with the **Vietnamese government** and **educational institutions**, should support the development of CCE materials in Vietnamese and ethnic minority languages, regularly update them on portals, and disseminate them to teachers and students.

For example: regularly updating CCE information and materials on the Edubit e-learning platform of Green Generation and the Climate Learning Hub and organizing online sharing sessions to communicate about these platforms to schools nationwide.

- The **United Nations**, **NGOs**, **businesses, research institutes** and other stakeholders should increase investment and expand opportunities as well as provide financial and technical support to youth's extracurricular activities and startups aiming to tackle climate change-related issues.

For example: organizing contests, conducting training, and providing funds to support youth initiatives such as Green Youth Labs and Youth4Climate Funds.

- **Enterprises** should coordinate with **schools** and **local authorities** to promote investment in finance and facilities for climate change activities and implement their corporate social responsibility (CSR), especially for rural and remote areas.

For example: providing equipment for monitoring air pollution, waste classification bins, and internet-connected devices for learning.

Photo: UNDP Viet Nam

5.5 Specific recommendations to support vulnerable students

- The **Ministry of Education and Training**, **NGOs**, and **businesses** should provide scholarships, sponsorship, and/or financial opportunities to support students from vulnerable communities with pursuing higher education and vocational training, particularly in climate change-related skills, so they are able to find decent jobs in their home localities.
- The **Ministry of Education and Training**, **international donors**, and **enterprises** should promote investment in facilities and equipment for CCE for students from disadvantaged groups and remote areas, especially Internet-connected devices such as screens, projectors , and electronic devices for students from poor households.
- **Departments of Education and Training**, the **United Nations**, and **NGOs** should work with **schools** to create more experiential opportunities for students from vulnerable groups, especially people in poverty, the LGBTQIA+ community, and ethnic minorities.

For example: climate change education programmes associated with sustainable livelihoods, poverty reduction, and/or solutions based on nature and local ethnic minority knowledge.

Photo: UNDP Viet Nam

Photo: UNDP Viet Nam

Conclusion

High school students have access to basic information about environmental pollution and climate change, and most survey respondents believed that such knowledge has helped them to change their daily behavior. For students, school is one of the three most popular information channels for climate change information and knowledge. The majority (95.8%) have participated in extracurricular activities on climate change organized by their school, and most are satisfied with these programmes, especially for volunteering activities, community projects, and science and technology initiatives. This shows that climate change knowledge has been delivered to high school students in various formats.

However, nearly one third of students were still dissatisfied with the applicability of climate change knowledge, and believed that the level at which they acquired such knowledge in schools was not as effective as other information channels such as the internet. Teachers also shared that because they had not received formal training and teaching materials on climate change, they were still dependent on online resources. This may contribute to explaining why CCE at school is not as effective as some youth might expect. Regarding extracurricular activities, students felt that schools and Youth Unions' climate change movements were neither attractive nor creative enough, and sometimes were considered mere formalities. Meanwhile, activities initiated and led by students have not received adequate support from schools, local authorities, and relevant agencies. According to the vulnerable groups participating in the survey, those living in rural areas have less access to climate change knowledge than their urban peers and experience more difficulties participating in activities outside of school. Of particular note, the proportion of students from poor households with access to climate change knowledge is lower compared to those from other groups.

Regarding students' needs, most agree that the curriculum needs to incorporate more local knowledge and information, and teaching methods should be more innovative to increase student engagement. They prefer learning through real-life situations and interactive games, and especially have a high demand for experiential extracurricular activities such as community projects, presentations, and other forms of participation.

Based on these findings, the authors have analyzed opportunities and challenges and made detailed recommendations to different stakeholders including the government, ministries, schools, teachers, students, and NGOs to further meet students' needs for CCE and to improve the effectiveness of CCE at school.

The study presented an overview of the perspectives and needs of youth on CCE at the high school level in 46 provinces and cities nationwide. The results contribute to filling the existing gap in research on CCE in general and the needs of students in particular regarding the content and methods of integrated teaching about climate change in high schools.

Photo: www.freepik.com

Opportunities for further research

In order to further improve the quality of CCE research for students and youth, below, the following recommendations should be considered for future investigation:

- In-depth research on the perspectives and needs of students belonging to vulnerable groups, especially those in economically disadvantaged areas (students from poor households), in rural or remote areas, ethnic minority students, migrants, and students from LGBTQIA+ community.
- Further research on the contents and forms of experiential and extracurricular activities on climate change inside and outside the schools using a combination of participatory research methodologies.
- Deeper investigation into the perspectives and needs of teachers, school administrators, and education administrators.

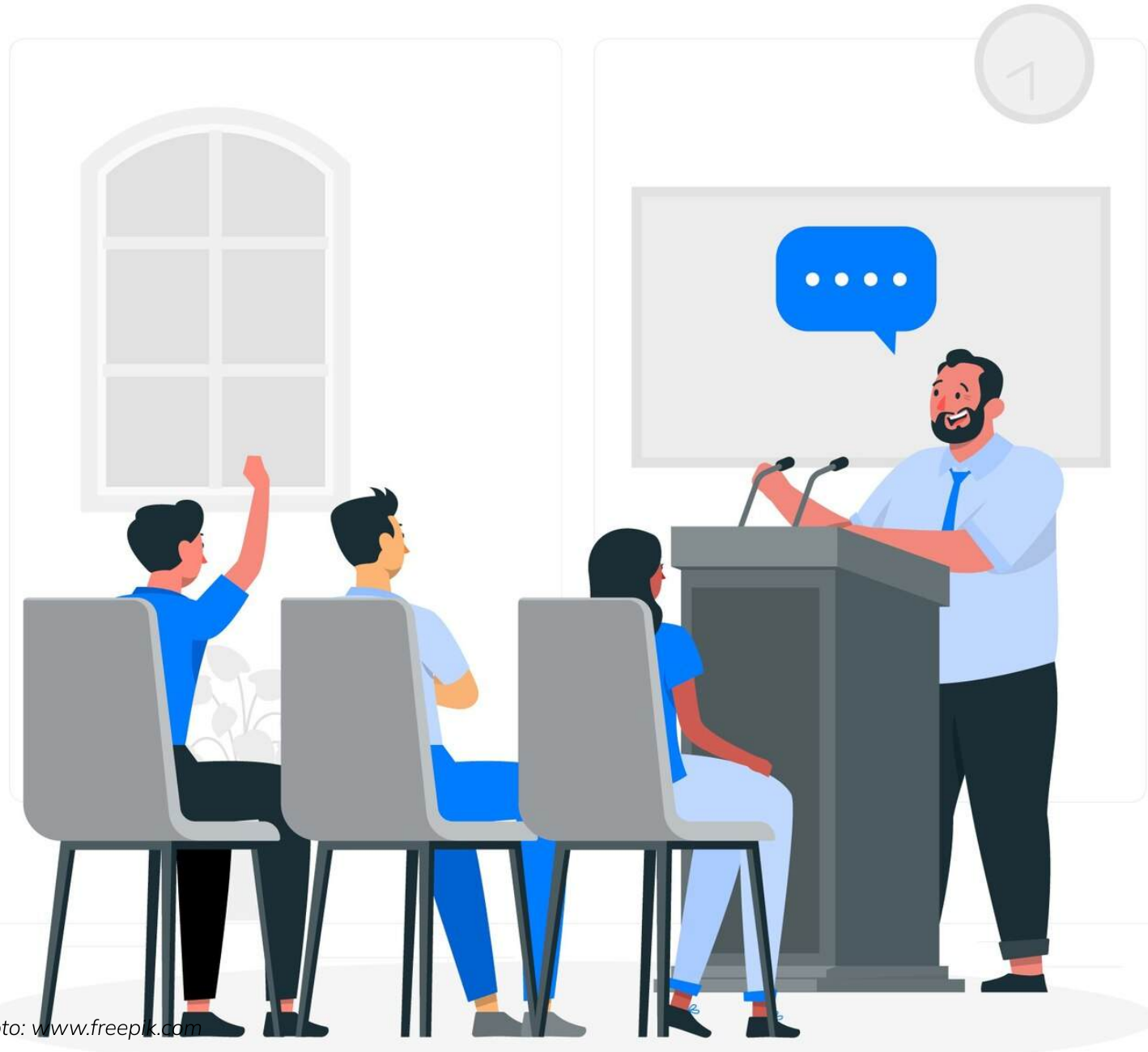

Photo: www.freepik.com

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ANNEXES

Annex 1: Student Survey Questionnaire

I. Youth access to knowledge and practice on climate change and environment

1. Through which information channels do you usually know about climate change? (choose up to 3 answers)

- ☐ School
- ☐ Extracurricular ctivities (workshops, projects, competitions) organized by the youth or NGOs
- ☐ News, Radio, newspapers
- ☐ Internet (online newspapers, websites), social media
- ☐ E-learning Courses
- ☐ Friends & relatives
- ☐ Documents, references books, and other types of literature
- ☐ Other (please specify)

2. Please rate your level of absorption of Climate Change information (on a scale from 1 - Very effective to 5 - Very ineffective) on the following information channels

Information channels/ Level of absorption	1	2	3	4	5
School					
Activities (workshops, projects, competitions) organized by youth/schools					
Activities (workshops, projects, competitions) organized by NGOs					
News, Radio, newspapers					
Internet (online newspapers, websites), social media					
E-learning courses					
Friends & relatives					
Documents, references, books					

3. Have you ever learned about climate change and the environment in high school?

- Already
- Not yet **(=> Move to Section 03)**
- I don't know **(=> Move to Section 03)**

II. Effectiveness CCE programs at high school level:

1. If you have learned about climate change and environment at school, from what subjects or activities have you learned about Climate Change and environment? (Select all subjects that apply)

- [ ] Experiential activities and career guidance
- [ ] Local education
- [ ] Math
- [ ] Physics
- [ ] Chemistry
- [ ] Literature
- [ ] History
- [ ] Geography
- [ ] Biology
- [ ] Foreign language
- [ ] Technology
- [ ] Computer science
- [ ] Civic education
- [ ] National Defense education
- [ ] Arts
- [ ] Physical education
- [ ] Others:

2. Indicate your level of satisfaction with the following criteria related to the climate change and environment education programme at the high school level

Criteria	Not satisfied at all	Not very satisfied	Satisfied	Very satisfied	No experience
Facilities for CCE					
CCE teaching methodologies					
Applicability of Environmental and Climate Change knowledge into real life and future career					

3. In addition to the classroom programme, indicate your level of satisfaction with the activities on climate change and the environment organized by the school that you have participated in:

Activity	Not satisfied at all	Not very satisfied	Satisfied	Very satisfied	No experience
Workshops, conferences, and seminars on climate change					
Extracurricular clubs					
Exhibitions on climate change					
Climate change mitigation and adaptation competitions/contests					
Volunteer activities related to climate change					

Community projects related to climate change					
Scientific and technical initiatives to tackle climate change					
Field trips to learn about environment and climate change					
Movements launched by schools, Youth Unions, and associations					

4. In addition to the above activities, are there any other activities organized by the school that you have participated in? (specify if any):

5. After participating in CCE at high school, to what extent have you improved your knowledge and behavior?[30]

- I still don't really understand anything about climate change and its impacts.
- I understand some basic definitions of climate change and its impacts but still do not know what to do.
- I understand the significance and impacts of climate change and I am changing my daily habits to contribute to addressing climate change issues.
- I understand about climate change and also participate in community initiatives and technical solutions, or know what I have to do for my work and study after graduating from high school to contribute to climate action.

III. Needs and expectations of young people on CCE at high school level:

1. Name the 3 things you most like to improve in the environment and climate change education curriculum:

☐ Textbooks
☐ Exercises, reference materials
☐ Teaching methods
☐ Duration of class
☐ Subjects related to Climate change
☐ Experiential, hands-on activities
☐ Local elements included in the curriculum
☐ Facilities
☐ Others

2. If the school incorporates climate change content into extracurricular activities to help students learn and experience additional skills so that young people can participate in climate action, which of the following extracurricular contents and programmes should be prioritized? (Choose up to 3 answers)

[30] Refer to the UNESCO questionnaire (2022). Youth demands for quality CCE.

- [ ] Presentation on climate change and environment
- [ ] Learning through games (both direct and online)
- [ ] Learning through case studies
- [ ] Community projects related to the environment and climate change
- [ ] Participate in scientific and technical initiatives on the environment and climate change
- [ ] Learning through role play
- [ ] Participate in debates on the environment and climate change
- [ ] Youth-led activities
- [ ] Seminars, conferences, and talk shows on the environment and climate change
- [ ] Environment and climate change extracurricular clubs
- [ ] Exhibitions and films on the environment and climate change
- [ ] Competitions on environmental and climate change solutions
- [ ] Voluntary activities related to the environment and climate change

3. In your opinion, what are the main reasons why you want to study and learn about climate change? (Choose up to 3 answers)

- [ ] My school environment influenced me
- [ ] I am from a vulnerable group/affected by climate change
- [ ] My hobbies/personal curiosity
- [ ] Influence from family and peers
- [ ] Influence from social media and websites
- [ ] Influence from KOLs (e.g., celebrities/artists/politicians, etc.)
- [ ] I am influenced by the general drive of society
- [ ] None of the above

IV. General information about you

4. Your gender

- Male
- Female
- Other

5. Which is the types of high school you are studying?

- Public high school
- Private high school

6. **What is the name of your high school ?**

7. **What grade have you just finished?**

- Grade 10
- Grade 11
- Grade 12

8. **Where do you live?**

(List of 63 dropdown provinces)

9. **Has your living area ever been affected by climate change in the last 5 years?**

- Yes
- No

10. **Do you belong to any of the groups below? (Please select all options that apply. If no option is applicable, please select "None of the above")**

- ☐ Students in rural areas
- ☐ Students from low-income households
- ☐ Students with disabilities
- ☐ Students who are ethnic minorities
- ☐ Students from the LGBTQIA+ community
- ☐ Students who are migrants (from one province to another) or refugees
- ☐ None of the above

11. **As a person from one of the above groups, do you have any difficulties accessing CCE? (If not in any of the above groups, please ignore this section)**

Annex 2: In-depth Interview Guidance

Guidance for in-depth Interview with Students

KII Questions: *Priority questions are marked with an * but it will depend on your context and needs. Not all follow-up questions need to be asked, they are there to help spark discussion and guide what information to collect.* *(It is recommended that the interviewer should prepare documents containing the interviewee's answers to easily compare and ask questions.)*	
Introduction My name is (Moderator) .... I'm from the Youth Policy Working Group - a group formed by the United Nations Development Programme (UNDP) within Viet Nam Youth4Climate Initiative to work on climate change policy advocacy activities. We are currently conducting research on "Current situation, advantages, and challenges of climate change education in the high school education system in Viet Nam''. We are delighted to have your participation in the discussion today. Before starting the discussion, I would like to read some information related to the consent to this study: Consent form of students participating in the study.docx Are you clear on the consent and do you agree for us to conduct the discussion? (Get consensus from everyone)	
Personal information	
• Can you introduce yourself? (Name, grade, school, province, current Youth Union activities you are participating in, playing a leadership role within the school? • What type of education are you pursuing? (Regular education, public high school, private high school, specialized high school)	
Climate Education Demands	
• In your opinion, are you affected by climate change? Who is affected by climate change? • Do you need to learn about climate change? If so, please share with us your purpose for learning about climate change? • In everyday life, since ... is a factor that greatly impacts your decision to learn about climate change. Can you explain further?	• You can build on the answers to develop more in-depth questions
Climate Education Demands	
• Which set of textbooks are you studying? ("Connecting Knowledge with Life", "Creative Horizons" and "Kites", or any other programme of the school? etc.). How is the distribution of subjects for different sets of textbooks? • Is climate change knowledge included in your school's curriculum?	• If yes, proceed to the next question. • If no, or not sure, proceed to question 9.

Question was for participants who answered “Yes” to the previous question	
1. How is climate change currently taught in your school?* • How is climate change integrated into school subjects, and how is the duration for each module? • How is climate change integrated into extracurricular activities at school? (clubs, competitions, etc.) • Additionally, have you been taught about environmental topics at school? • Please share your experience with subjects that integrate the environment and climate change.	
2. What does the teacher teach about Climate Change?* • Check how students are taught about climate information, such as global warming, floods, etc. Students may confuse this question with the question below.	Students may have confusion between this question and the one below
3. What are the methodologies for teaching climate change in your school? • The interviewer can provide some suggestions if the student does not understand the question: through lectures, additional reading materials, images, videos, games, etc.	
4. Do you encounter any difficulties when learning about the environment and climate change? If so, can you share it with us about such difficulties? • Teaching methods and tools • Active participation in the classroom • Level of knowledge	Be careful not to direct or force students to answer that they have difficulties. You can refer to the questionnaire survey data to consider asking more in this section.
5. What would you like to change to help improve the effectiveness of CCE?	Same as above. Be careful not to direct or force students in providing answers.
6. What do you think is the role of students/yourself in implementing CCE? *	
7. Besides the classroom curriculum, do you learn about the Environment and Climate Change through other information channels, groups or other sources?	
8. Have you been asked to evaluate your satisfaction after participating in the school's programme? If yes, how was the evaluation conducted *	
9. Do you see any benefits of CCE for your future activities? If yes, what are they?	

Questions for both groups of students (regardless of whether CCE is integrated into their school's curriculum or not)	
10. What do you think is the role of schools in supporting CCE at the high school level?*	
11. Besides official classes, does your school have any extracurricular or practical activities to help students change their behavior/habits or solve problems related to climate change? How are such programmes/activities conducted? *	
12. Are you aware of student-led activities related to climate change at your school, and if yes, what are they? How are these programmes/ activities organized?	If the participant has already provided this info from the previous question, skip this question.
13. What other extracurricular programmes do you think would benefit CCE for students?	
14. What do you think is the role of teachers in supporting student-led activities or other extracurricular activities related to climate change? What does that support mean to such activities?*	
15. What do you think is the role of schools and local communities in supporting student-led activities or other extracurricular activities related to climate change? What does that support mean to such activities?*	
16. (For students from disadvantaged groups) Do you encounter difficulties that hinder your access to CCE at school? If yes, can you share more with us?	For those who already shared difficulties in the survey questionnaire, the interviewer needs to start from the problems they shared and ask more in-depth questions.
1. (For students who have participated in/have community initiatives on the environment and climate change) Ask more information about the initiatives. Does the knowledge from school contribute to such initiatives?	
2. Do you have information or stories you'd like to share more with us? Do you have any questions for us?	

KII Questions: *Priority questions are marked *, however this depends on the context and needs so you can choose the ones that best suit the situation. You don't have to ask all the questions on the list. They are designed to support your dischigh school ion and information collection.* *(It is recommended that the interviewer should prepare documents containing the interviewee's answers to easily compare and ask* **questions)**	
Introduction My name is (Moderator) .... I'm from the Youth Policy Working Group - a group formed by the United Nations Development Programme (UNDP) within Viet Nam Youth4Climate Initiative to work on climate change policy advocacy activities. We are currently conducting research on "Current situation, advantages, and challenges of climate change education in the high school education system in Viet Nam''. It is our honor to have the participation of the distinguished teachers in the discussion today. Before starting the discussion, I would like to read some information related to the consent to this study: Now you are clear about the consent document and do you agree to let us proceed with the discussion? Please let me know if there is any problem.	
Demographic Information	
• Can you introduce yourself? • (Name, number of years of experience, school name, city/province you are living in, subjects you are currently teaching, any other position at school apart from teaching?) • Which educational institution are you working in? (Public school, private school, international school)	
Questions about the Status and Needs of CCE	
• Is climate change knowledge integrated in your subjects (for which grades)? • Or do you know any other subjects that integrate climate change knowledge?	If the answer is "Yes", move on to the next question If the answer is "No", move to question 11
For teachers answering "Yes"	
1. High school programme: • Which set of textbooks is being taught in the school (Kite, Creative Horizon, Connecting Knowledge to Life, etc.)? • **Do teachers receive guidance on teaching climate change from the department/ministry? Or at school, do you have instructions for integrating climate change into the subject you are teaching?** • **Are teachers trained to integrate CCE into the programme from the school/department/ministry? If yes, can you share more details about the training you received?** • **How is climate cChange integrated in the subjects in terms of modules and duration?**	

2. What do you usually teach students about climate change? • Check what the teacher thinks about the term “climate change” and explains it to the students.	If the teacher already provided the information in the previous section, skip this question
3. What teaching methods do you use for climate change-related modules? (Lectures, reference materials, video images, games, etc.) If the teacher talks about methods, ask them to explain in more detail. (When did you apply this method, where did you learn to use this method, from whom, is there any set of instructions?) - Do you think these methods are effective? (Ask about the students’ reactions when she used these teaching methods.) - In addition to the methods you mentioned, do you plan to apply any other teaching methods?	
4. How do you evaluate the current CCE programme (advantages and limitations)?	
5. Do you encounter any difficulties when teaching climate change integrated modules in terms of: • Facilities (projectors, models/replicas, etc.) • Materials (videos, other e-lecture materials, etc.) • Human resources • Instructions and regulations • Teaching methods	
6. What kind of support do you think you might need to improve the effectiveness of CCE integrated in the subject?	
7. What is the role of students in implementing climate change integration (should it be learners only, or participants contributing to the subject)?	
8. * Do you collect feedback or suggestions from students to improve the quality of teaching? If yes, how do you do it? *Does the school have a feedback form for teaching quality/contents?	
9. On a scale of 1-10, how do you rate students’ understanding of the environment and climate change? From your perspective, how are students receiving climate change knowledge (is it easy for them to understand, are they interested in the knowledge, etc.)?	
10. What changes do teachers expect from students after climate change learning, in terms of: • Learning results • Application in practice	

General questions for all teachers (regardless of whether CCE is integrated in their subject or not)	
1. For you, what role does school play in disseminating climate change knowledge at the high school level? *This question asks about the general role of the school. Then ask in-depth questions about the school where the teacher is teaching (the role of the school BOD, youth union...)	
2. * What do you think is the role of teachers when supporting extracurricular activities or activities organized by students related to climate change?	
3. * Outside of regular school hours, does your school have any activities for students to approach climate change issues, such as career guidance, experiential and extracurricular activities, etc.? If yes, how are these activities organized? • At class level • At school level (Youth Union operations, etc.) • At community level	If the teacher already shared about the activities the school organizes, ask more in-depth questions.
4. In your school, are there activities related to the environment and climate change organized by students? • If yes, do they receive support from the school?	If the teacher already answered this in the previous question, skip this question.
5. * What do you think is the role of schools and localities in supporting extracurricular activities or activities organized by students related to climate change?	
6. * What do you think is the role of schools and localities in supporting extracurricular activities or activities organized by students related to climate change?	
7. Do you have more information or stories to share with us? Do you have any questions for us?	

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Annex 3: List of In-Depth Interviews

List of In-Depth Interview Student Participants

No.	Code	Gender	Grade in school year 2022 - 2023	School type	GE Program	City/province	Group
1	HS001	F	11	Specialized	GE Program 2006	Ninh Thuan	
2	HS002	F	11	Specialized	GE Program 2006	Ninh Thuan	
3	HS003	F	10	Public	GE Program 2018	Kien Giang	Migrant
4	HS004	F	10	Specialized	GE Program 2018	Dak Nong	
5	HS005	M	10	Specialized	GE Program 2018	Dak Nong	Ethnic Minority
6	HS006	F	11	Public	GE Program 2006	Thai Binh	Rural
7	HS007	F	11	Public	GE Program 2006	Thai Binh	Rural
8	HS008	M	11	Public	GE Program 2006	Thai Binh	Rural
9	HS009	M	11	Public	GE Program 2006	Thai Binh	Rural
10	HS010	M	11	Public	GE Program 2006	Nghe An	
11	HS011	F	10	Public	GE Program 2006	Vung Tau	
12	HS012	M	11	Specialized	GE Program 2006	Ben Tre	Rural
13	HS013	M	10	Specialized	GE Program 2018	Can Tho	
14	HS014	M	10	Specialized	GE Program 2018	Ha Noi	
15	HS015	F	12	Public	GE Program 2006	HCMC	
16	HS016	F	12	Public	GE Program 2006	HCMC	
17	HS017	F	12	Public	GE Program 2006	HCMC	
18	HS018	F	10	Public	GE Program 2018	HCMC	
19	HS019	M	12	Public	GE Program 2006	Ha Noi	
20	HS020	F	12	Specialized	GE Program 2006	Lang Son	

List of teacher participants in in-depth interviews

No.	Code	Gender	Subject	Type of School	City/province
1	GV001	F	English	Public	Da Nang
2	GV002	F	Literature	Public	Quang Nam
3	GV003	F	Literature	Public	Bac Ninh
4	GV004	F	Economic and legal education/ Civic education	Both Public and private	Ha Noi
5	GV005	F	Geography	Both Public and private	Ha Noi
6	GV006	F	Literature	Public	Bac Ninh
7	GV007	F	English	Specialized	Ha Noi
8	GV008	M	Math	Specialized	Tay Ninh
9	GV009	F	Math/ Experiential activities and Career guidance	Public	Ha Noi
10	GV010	F	Geography	Public	Ha Noi
11	GV011	F	Geography/ Local education	Specialized	Tay Ninh
12	GV012	F	Chemistry	Public	HCMC
13	GV013	F	Chemistry	Public	Quang Nam
14	GV014	F	History	Public	Ha Noi

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Members of the Youth Policy Working Group 2023


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Dao Manh Tri


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Luong Nguyen Ngoc Mai


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Nguyen Mai Hoang Oanh


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Dang Kim Ngan


Phung Hoang Ca


Pham Thi Thanh Mai


Truong Huu Dang Khoa


Vo Hoai Kieu An


Nguyen Ha Chi


Do Thao Phuong


Nguyen Thi Hoang Mai


Le Tran Binh Nguyen


Bui Phuong Anh


Dinh Duc Hai


Nguyen Ba Phong


Tran Nguyen Huy Ninh


Luu Thi Truc Ha

Dao Nguyen Tien

Nguyen Huong Giang

Nguyen Vy Nhat Duong

Nguyen Thi Bao Tram

Hoang Yen

Nguyen Nhat Linh

Nguyen Vu Anh Minh

Nguyen Van Thien

Nguyen Thai Son

Hoang Ngoc Minh Chau

Tran Lan Nhi

Le Hoang Thien Ngan

Tran Thu Phuong

Hoang Khanh Lam

Nguyen Ngoc Tuan

Tran Thuong

Nguyen Lam Ha

Pham Dieu Linh

Kieu Mai Anh

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